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CITY OF HUNTINGTON BEACH

2010 Urban Water Management Plan

June 2011

Prepared By:

PSOMAS

2010

URBAN WATER MANAGEMENT PLAN

City of Huntington Beach

June 20, 2011

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ACRONYMS and ABBREVIATIONS

AB	Assembly Bill
AES	Allied Energy Systems Corporation
AF	Acre Feet
AFY	Acre Feet per Year
AOC	Assimiable Organic Carbon
ARRA	American Recovery and Reinvestment Act of 2009
ASCE	American Society of Civil Engineers
AWPF	Advanced Water Purification Facilities
BEA	Basin Equity Assessment
BMP	Best Management Practices
BPP	Basin Production Percentage
BTEX	Benzene, Toluene, Ethyl Benzene, Xlenes
CALSIM	California Water Allocation and Reservoir Operations Model
CAWCD	Central Arizona Water Conservation District
CCF	Hundred Cubic Feet
CCR	Consumer Confidence Reports
CDPH	California Department of Public Health
CDR	Center for Demographic Research
CEQA	California Environmental Quality Act
CFS	Cubic Feet Per Second
CIMIS	California Irrigation Management Information System
CPTP	Coastal Pumping Transfer Program
CRA	Colorado River Aqueduct
CUWCC	California Urban Water Conservation Council
CVP	Central Valley Project
CVWD	Coachella Valley Water District
CWTF	Colored Water Treatment Facility
DATS	Deep Aquifer Treatment System
DBP	Disinfection Byproducts
D/DBP	Disinfectants and Disinfection Byproducts
DMM	Demand Management Measure
DOE	Department of Energy
DPH	Department of Public Health
DWR	Department of Water Resources
DWCV	Desert Water Agency/Coachella Valley Water District
EIR	Environmental Impact Report
EOC	Emergency Operations Center
EPA	Environmental Protection Agency
ESA	Endangered Species Act
ET	Evapotranspiration
Eto	Evapotranspiration From a Standardized Grass Surface
Etr	Evapotranspiration From a Standardized Alfalfa Surface
ETWD	El Toro Water District

ACRONYMS and ABBREVIATIONS (cont'd)

FY	Fiscal Year
GAC	Granular Activated Carbon
GAP	Green Acres Project
GPCD	Gallons Per Capita Per Day
GPD	Gallons Per Day
GPF	Gallons Per Flush
GPM	Gallons Per Minute
GWMP	Groundwater Management Plan
GWRS	Groundwater Replenishment System
HAAs	Haloacetic Acids
IAWP	Interim Agricultural Water Program
ICS	Intentionally Created Surplus
IID	Imperial Irrigation District
In	Inches
IRP	Integrated Resources Plan
IRWD	Irvine Ranch Water District
IRWM	Integrated Regional Water Management
LACDPW	Los Angeles County Department of Public Works
LRP	Local Resources Program
LTFP	Long Term Facilities Plan
M&I	Municipal and Industrial
MAF	Million Acre Feet
MCAS	Marine Corps Air Station
MCL	Maximum Contaminant Level
MCWD	Mesa Consolidated Water District
Metropolitan	Metropolitan District of Southern California
MGD	Million Gallons per Day
Mg/L	Milligrams Per Liter
MIN	Minutes
MNWD	Moulton Niguel Water District
MOU	Memorandum of Understanding
MPR	Master Plan Report
MTBE	Methyl Tertiary Butyl Ether
MWD	Metropolitan Water District of Southern California
MWDOC	Municipal Water District of Orange County
NBGPP	North Basin Groundwater Protection Project
NDMA	N-nitrosodimethylamine
NF	Nanofiltration
ng/L	Nanogram per Liter
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
OC	Orange County
OCSD	Orange County Sanitation District

ACRONYMS and ABBREVIATIONS (cont'd)

OCWA	Orange County Water Association
OCWD	Orange County Water District
OEHHA	Office of Environmental Health Hazard Assessment
PCE	Perchloroethylene
pci/L	Picocuries Per Liter
PEIR	Program Environmental Impact Report
PG&E	Pacific Gas & Electric
PHG	Public Health Goal
PPCPs	Pharmaceuticals and Personal Care Products
PVID	Palo Verde Irrigation District
QSA	Quantification Settlement Agreement
RA	Replenishment Assessment
RO	Reverse Osmosis
RUWMP	Regional Urban Water Management Plan
RWQCB	Regional Water Quality Control Board
SAWPA	Santa Ana Watershed Project Authority
SB	Senate Bill
SBGPP	South Basin Groundwater Protection Project
SBVMWD	San Bernardino Valley Municipal Water District
SCAB	South Coast Air Basin
SCADA	Supervisory Control and Data Acquisition System
SCCWRRS	Southern California Comprehensive Water Reclamation and Reuse Study
SDCWA	San Diego County Water Authority
SDWA	Safe Drinking Water Act
SCWD	South Coast Water District
SNWA	Southern Nevada Water Authority
SOCWRS	South Orange County Water Reliability Study
SWP	State Water Project
SWRCB	State Water Resources Control Board
TAF	Thousand Acre Feet
TCE	Trichloroethylene
TDS	Total Dissolved Solids
THM	Trihalomethanes
TIN	Total Inorganic Nitrogen
ug/L	Micrograms Per Liter
ULFT	Ultra Low Flush Toilet
USBR	U.S. Bureau of Reclamation
USEPA	United States Environmental Protection Agency
UWMP	Urban Water Management Plan
VOC	Volatile Organic Compounds
WARN	Water Agencies Response Network
WEROC	Water Emergency Response Organization of Orange County

ACRONYMS and ABBREVIATIONS (cont'd)

WOCWB	West Orange County Water Board
WMP	Water Master Plan
WOC	Water Operations Center
WRCC	Western Regional Climate Center
WRD	Water Replenishment District
WSAP	Water Supply Allocation Plan
WSDM	Water Surplus and Drought Management

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1 INTRODUCTION

1.1 PURPOSE AND UWMP SUMMARY

An Urban Water Management Plan (UWMP or Plan) prepared by a water purveyor is intended to ensure the appropriate level of reliability of water service sufficient to meet the needs of its various categories of customers during normal, single dry or multiple dry years. The California Water Management Planning Act of 1983 (Act), as amended, requires urban water suppliers to develop an UWMP every five years in the years ending in zero and five. Under normal circumstances, all 2010 UWMPs would have been due for submittal to the Department of Water Resources (DWR) by December 31, 2010; however, Senate Bill (SB) 7-7 (or SBX7-7) provided an additional six months to retail urban water supply agencies to allow them to conduct additional required water conservation analyses. Thus, the City's 2010 UWMP must now be adopted by July 1, 2011 and submitted to DWR on or before August 1, 2011.

In addressing urban water management issues, the legislature made a number of significant declarations including:

- The waters of the state are a limited and renewable resource subject to ever increasing demands;
- Conservation and efficient use of urban water supplies are of statewide concern;
- Successful implementation of plans is best accomplished at the local level;
- Conservation and efficient use of water shall be actively pursued to protect both the people of the state and their water resources;
- Conservation and efficient use of urban water supplies shall be a guiding criterion in public decisions; and
- Urban water suppliers shall be required to develop water management plans to achieve conservation and efficient use.

The City of Huntington Beach (City) 2010 UWMP has been prepared in compliance with the requirements of the Act, as amended to 2010[1] (Appendix A), and includes the following:

- Service Area
- Facilities
- Water Sources and Supplies
- Water Quality Information

[1] California Water Code, Division 6, Part 2.6; §10610, et. seq. Established by Assembly Bill 797 (1983).

- Water Reliability Planning
- Water Use Provisions
- Water Demand Management Measures
- Water Shortage Contingency Plan
- Water Recycling

1.2 UWMP UPDATE PREPARATION

The City's 2010 UWMP revises the 2005 UWMP prepared by Psomas for Huntington Beach and incorporates changes enacted by legislation including SB 1087 (2005), AB 1376 (2007), AB 1465 (2010), and SBX7-7 (2010). A brief summary of each of these legislative changes, as well as other related legislative changes, follows:

- SB 1087 (2005) – Requires urban retail water suppliers to include single family and multiple family projections for lower income and affordable households in their UWMPs. This legislation is intended to assist the water agencies in complying with the requirements of Government Code Section 65589.7, which requires water suppliers to grant a priority for provision of service to housing units affordable to lower income households.
- AB 1376 (2007) – Requires each urban water supplier to notify the Planning Department of any City or County within which the supplier provides water with at least 60 days prior notice that the supplier will be reviewing the plan and considering amendments or changes to it.
- AB 1465 (2010) – Clarifies that urban water suppliers that are members of the California Urban Water Conservation Council (CUWCC) and comply with the provisions of the "*Memorandum of Understanding Regarding Urban Water Conservation in California*"[2] dated December 10, 2008, as it may be amended (MOU), may submit their annual reports required under the CUWCC MOU as evidence of compliance without the need for any additional documentation in their UWMPs.
- SBX7-7 (2010) – Requires urban retail water suppliers to include the following information in their 2010 UWMPs with respect to a targeted 20 percent water conservation reduction by 2020: (1) baseline daily per capita use; (2) urban water use target; (3) interim water use target; and (4) compliance daily per capita water use, including technical bases and supporting data for those determinations.
- SBX7-7 (2010) – Extends the deadline for submittal of urban retail water suppliers 2010 UWMPs until July 1, 2011, to provide sufficient time to prepare

[2] The *Memorandum of Understanding Regarding Urban Water Conservation in California* (MOU) was adopted in September 1991 by a large number of water suppliers, public advocacy organizations and other interested groups and most recently amended on December 10, 2008. The MOU created the *California Urban Water Conservation Council* and established 16 Best Management Practices (BMPs) for urban water conservation, recently refined to 14 BMPs.

the additional required water conservation analyses described in the previous bullet.

Other legislation, which does not directly impact UWMPs, but affects eligibility for grants and loans, includes:

- AB 1420 (2007) – This legislation contains several provisions relating to urban water management plans, including:
  - Conditions eligibility for State grant and loan funding to an urban water supplier awarded or administered by DWR, the State Water Resources Control Board, or California Bay-Delta Authority or its successor agency on the following factors: (1) the implementation of water demand management measures, including the extent of compliance with conservation measures described in the previously referenced "*Memorandum of Understanding Regarding Urban Water Conservation in California*."
  - Requires DWR, in consultation with the State Water Resources Control Board and the California Bay-Delta Authority or its successor agency, to develop eligibility requirements to implement the foregoing grant and loan conditions.
  - Requires DWR, in consultation with the CUWCC, to convene a technical panel no later than January 1, 2009 to provide information and recommendations to the Department and the Legislature on new demand management measures, technologies and approaches. The panel and DWR must report to the legislature on their findings no later than January 1, 2010 and each five years thereafter.
- SBX3-27 (2009) – Exempts projects funded by the American Recovery and Reinvestment Act of 2009 (ARRA) from the conditions placed on state funding for water management to urban water suppliers regarding implementation of water conservation measures that were implemented under AB 1420.
- SBX7-7 – Repeals the existing grant funding conditions of AB 1420 on July 1, 2016 if they are not extended or altered prior to this date. After July 1, 2016, urban water retail water suppliers are required to be in compliance with the 20 percent by 2020 water use reduction goals to be eligible for state water management grants or loans.

The UWMP also incorporates water use efficiency efforts the City has implemented or is considering implementing pursuant to the previously referenced *Memorandum of Understanding Regarding Urban Water Conservation in California* (MOU). The City of Huntington Beach became signatory and adopted the MOU on December 19, 2000.

The sections in this Plan correspond to the outline of the Act, specifically Article 2, Contents of Plans, Sections 10631, 10632, and 10633. The sequence used for the required information, however, differs slightly in order to present information in a manner reflecting the unique characteristics of the City's water utility.

To assist Department of Water Resources staff in reviewing this UWMP, a copy of the DWR's suggested checklist entitled *Urban Water Management Plan Checklist, Organized by Subject*[3] is provided in Appendix B. The left hand column of the checklist notes where the applicable information described to the right can be found within the body of this Plan.

Plan Adoption

This Plan was developed by the City of Huntington Beach Public Works Department staff, in coordination with other departments of the City including the City Administrator's Office, Community Development Department, Economic Development Department, and City Clerk's Office with overall coordination and assistance from Psomas staff.

The 2010 UWMP was adopted by resolution of the Huntington Beach City Council on June 20, 2011 following a public hearing. The Plan was submitted to the California Department of Water Resources and the State Library and a copy provided to the County of Orange within 30 days of Council approval. Copies of the Notice of Public Hearing and the Resolution of Plan Adoption are included in Appendix C. Copies of the Plan were made available to the public within 30 days following submittal of the Plan to DWR.

A draft copy of the Plan was posted on the City's website prior to the public hearing where it was available to the public as well as the County of Orange, Municipal Water District of Orange County, Orange County Water District, the Metropolitan Water District of Southern California, and all other interested parties.

Agency Coordination

To assist Huntington Beach staff in preparation of the City's 2010 UWMP, City staff and/or Psomas staff attended the following workshops facilitated by DWR and the Metropolitan Water District of Southern California (MWD):

- **MWD:** 2010 UWMP Workshop held on August 18, 2010 at MWD Headquarters.
- **DWR:** On-line webinars held on November 30, 2010, December 16, 2010, January 5, 2011 and January 12, 2011.
- **DWR:** 2010 UWMP Workshop at held at MWD on March 2, 2011.
- **DWR:** 2010 UWMP Workshop held at the Irvine Ranch Water District (IRWD) on March 8, 2011.

[3] Checklist provided in DWR's Final Guidebook to Assist Urban Water Suppliers to Prepare a 2010 Urban Water Management Plan, March 2011 and available on DWR website at: http://www.water.ca.gov/urbanwatermanagement/guidebook/

Table 1.2-1 lists the entities that the City of Huntington Beach coordinated with in the development of the City's 2010 UWMP. The County of Orange was notified of the City's public hearing for consideration of adoption of the Plan at least 60 days prior to the hearing.

Table 1.2-1
City of Huntington Beach UWMP Development
Coordination and Public Involvement

Entities	Coordination and Public Involvement Actions					
	Participated in UWMP preparation	Used Agency Data as an Information Resource	Sent Draft UWMP and/or Available to on City Website	Commented on Draft UWMP	Sent Notice of Public Hearing	Attended Public Hearing
City Utilities Division	X	X	X	X	X	X
City Planning Department	X	X	X	X	X	X
City Clerk	X	X	X		X	X
DWR		X	X			
MWDOC		X	X		X	
MWD		X	X			
OCWD		X	X		X	
OCSD		X	X			
County of Orange			X		X	
General Public			X		X	X

In preparing this UWMP, the City also utilized information from MWD's November 2010 Final Regional UWMP, Municipal Water District of Orange County's (MWDOC) April 2011 Draft 2010 RUWMP, and the *"Guidebook to Assist Urban Water Suppliers to Prepare a 2010 Urban Water Management Plan"* prepared by DWR. This UWMP details the specifics as they relate to the City and its service area and will refer to MWD, MWDOC, the Orange County Water District (OCWD) and other agencies throughout. Numerous references were used in the development of this UWMP and are cited in footnotes throughout the Plan

The City is fully dependent on the Metropolitan Water District of Southern California (Metropolitan) through the Municipal Water District of Orange County (MWDOC) and the Orange County Water District (OCWD) for its long-term water supply. All of the City's water supply planning relates to the policies, rules, and regulations of these three water agencies. Development of the City's UWMP was also coordinated with MWDOC, which serves as the City's wholesaler of water received from Metropolitan; OCWD,

which manages the Santa Ana River (Orange County) groundwater basin and provides recycled water in partnership with the Orange County Sanitation District (OCSD); and the OCSD, which manages wastewater.

This UWMP details the specifics as they relate to the City of Huntington Beach Public Works Department and its service area and will refer to MWDOC, Metropolitan, OCWD and OCSD throughout. Appendix D lists the numerous references used benefiting the development of this Plan.

The UWMP is intended to serve as a general, flexible, and open-ended document that periodically can be updated to reflect changes in the Orange County water supply trends, and conservation and water use efficiency policies. This Plan, along with the City's Water Master Plan and other City planning documents, will be used by City staff to guide the City's water use and management efforts through the year 2015, when the UWMP is required to be updated.

1.3 HUNTINGTON BEACH WATER SERVICE AREA

Location

The City of Huntington Beach is located 35 miles southeast of Los Angeles and 90 miles northwest of San Diego along the Southern California coast of Orange County as shown in *Figure 1-1*. The City's water service area is 27.3 square miles of which 0.2 square miles is the City of Sunset Beach. The City is generally flat, with elevations ranging from a low of about 5 feet below to 120 feet above sea level. Huntington Beach is predominately residential, although 60,000 people are currently employed by over 10,000 businesses in the City.[4] The City has also has 71 parks and public facilities[5], and 8 ½ miles of beaches. The City also supplies water to Sunset Beach, which is approximately 68 acres of unincorporated land located off Pacific Coast Highway near Huntington Harbor.

Climate Characteristics

The City of Huntington Beach is located in an area known as the South Coast Air Basin (SCAB). The SCAB climate is characterized by what is known as Southern California's Mediterranean" climate: a semi-arid environment with mild winters, warm summers and moderate rainfall. The climate for the City is consistent with coastal Southern California. The general region lies in the semi-permanent high-pressure zone of the eastern Pacific. As a result, the climate is mild, tempered by cool sea breezes. The usually mild climatological pattern is interrupted infrequently by periods of extremely hot weather, winter storms, or Santa Ana winds.

[4] Per City website, http://www.ci.huntington-beach.ca.us/business/
[5] Per City website, http://www.ci.huntington-beach.ca.us/Residents/parks_facilities/parks/

The average annual temperature varies throughout the Basin, averaging 62 degrees Fahrenheit at the coast where the city is located. January is usually the coldest month while July and August are usually the hottest months of the year. Annual average relative humidity is 64.7 percent. Precipitation is typically 10 to 12 inches, occurring mostly between November and April. Average temperature and precipitation information for the Huntington Beach area is summarized in Table 1.3-1.

Figure 1-1
City of Huntington Beach Location Area

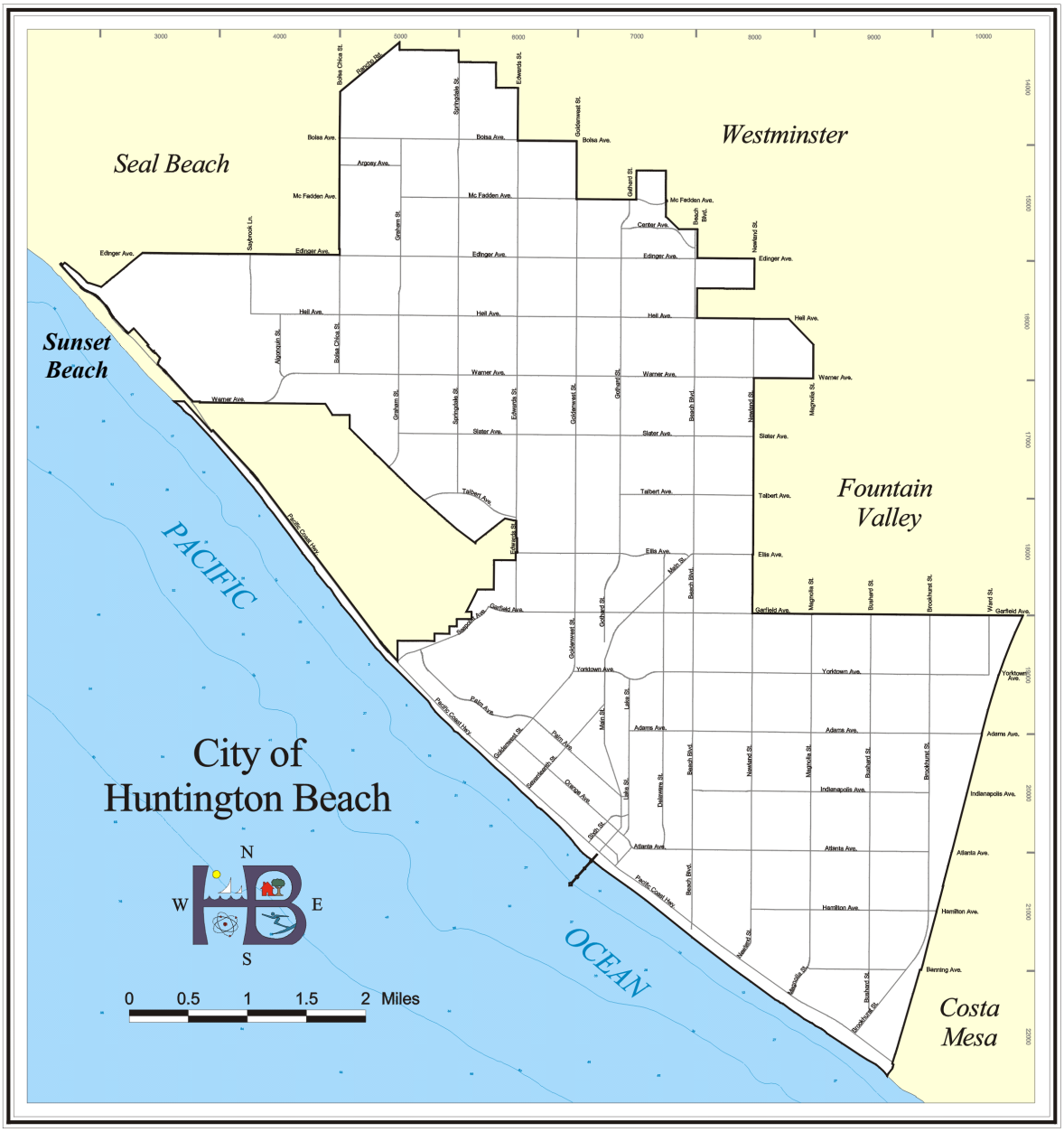


Table 1.3-1
City of Huntington Beach Average Temperatures and Rainfall[6]

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total or Average
Temp (°F)	Max	63.2	63.4	64.0	65.2	67.1	69.1	72.3	73.4	73.0	70.9	67.9	64.3	67.8
	Min	46.9	48.2	49.8	52.3	56.0	59.1	62.2	63.2	61.2	57.2	51.4	47.5	54.6
Rainfall (inches)		2.21	2.34	1.75	0.93	0.23	0.07	0.01	0.06	0.22	0.38	1.08	1.82	11.08
Snowfall (inches)		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Evapotranspiration

Evapotranspiration (ET) is the loss of water to the atmosphere by the combined processes of evaporation (from soil and plant surfaces) and transpiration (from plant tissues). It is an indication of how much water crops, lawn, garden, and trees need for healthy growth and productivity.

For ET to take place, the following conditions have to be met. First, water has to be present at the surface. Second, there must be some form of energy to convert the liquid water into a water vapor. Third, there must be a mechanism to transport the water vapor away from the evaporating surface.

Precipitation and irrigation are the two primary sources of water that plants use. Plant leaves and soil surfaces temporarily retain some part of the water applied to the soil. This part is readily available for evaporation. The remaining part infiltrates into the soil. Plants extract the infiltrated water through their roots and transport it up to their leaves for photosynthesis, a process by which plants produce glucose (sugar).

Many factors affect ET including:

- Weather parameters such as solar radiation, air temperature, relative humidity and wind speed;
- Soil factors such as soil texture, structure, density and chemistry; and
- Plant factors such as plant type, root depth, foliar density, height and stage of growth.

[6] Data obtained from Western Regional Climate Center (WRCC), Desert Research Institute, Reno, Nevada (http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?ca6175); WRCC program administered by the National Oceanic and Atmospheric Administration (NOAA); data extracted from monitoring Station 046175 at Newport Beach Harbor (closest WRCC station to Huntington Beach) covering the period January 1, 1921 through August 31, 2010.

Although ET can be measured using such devices as lysimeters, estimating ET using analytical and empirical equations is a common practice because measurement methods are expensive and time consuming. Most ET equations were developed by correlating measured ET to measured weather parameters that directly or indirectly affect ET. Since there are so many factors affecting ET, it is extremely difficult to formulate an equation that can produce estimates of ET under different sets of conditions. Therefore, the idea of a reference crop evapotranspiration was developed by researchers. Reference ET is the ET rate of a reference crop expressed in inches or millimeters.

Reference crops are either grass or alfalfa surfaces whose biophysical characteristics have been studied extensively. ET from a standardized grass surface is commonly denoted as ETo whereas ET from a standardized alfalfa surface is denoted as ETr. The American Society of Civil Engineers (ASCE) recommends the use of ETos and ETrs, respectively, where "s" stands for standardized surface conditions. The logic behind the evapotranspiration idea is to set up weather stations on standardized reference surfaces for which most of the biophysical properties used in ET equations are known. ET from such surfaces can then be estimated using these known parameters and measured weather parameters. Then a crop factor, commonly known as the "crop coefficient" of "Kc" is used to calculate the actual evapotranspiration (ETc) for a specific crop in the same microclimate as the weather station site.

The California Irrigation Management Information System (CIMIS), Department of Water Resources, Office of Water Efficiency is using well-watered actively growing closely clipped grass that is completely shading the soil as a reference crop at most of its over 130 weather stations. Therefore, reference evapotranspiration is mostly referred to as ETo on the CIMIS website, although there are a few notable exceptions with ETr. There are many theoretical and empirical equations around the world to estimate ETo. The choice of any one method depends on the accuracy of the equation under a given condition and the availability of the required data. For reference surfaces with known biophysical properties, the main factors affecting ETo include solar radiation, relative humidity/vapor pressure, air temperature and wind speed. Therefore ETo can be estimated quite accurately using a model (a series of mathematical equations).

The monthly average ETo data shown in Table 1.3-2 has been extracted from the CIMIS Irvine station (#75), which is the closest station to Huntington Beach (located on the grounds of a University of California field station at an elevation of 410 feet). This station was activated on October 7, 1987.[7]

[7] For additional information, refer to the CIMIS website at: http://www.cimis.water.ca.gov/cimis/frontStationDetailInfo.do?stationId=75&src=info

Table 1.3-2
Average Evapotranspiration (ETo) Rates for Huntington Beach Area[8]

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
ETo (inches)	2.18	2.49	3.67	4.71	5.18	5.87	6.29	6.17	4.57	3.66	2.59	2.25	49.63

Demographics

The population of the City's water service area is currently estimated at 204,831, and is growing slowly, as there is very little remaining vacant land. The City provides water to over 52,300 service connections. The Huntington Beach water service area is predominantly residential with over 90 percent of water service connections serving single-family and multi-family residences.

The average population per household reflected below is for the City of Huntington Beach which makes up almost the entire water service area (excludes Sunset Beach with a population of approximately 1,300). The population per household for the City was estimated at 2.59 by the Center for Demographic Research (CDR) at California State University Fullerton in 2010.

Utilizing CDR's 2010 Orange County Projections, adjusting to include the City's approved plans for the Downtown Area Specific Plan and the Beach Edinger Corridor Specific Plan, and adding the Sunset Beach population, generates a 7.3 percent increase in population over the next 25 years in the City's water service area. Table 1.3-3 shows population projections in five-year increments to the year 2035.

Table 1.3-3
City of Huntington Beach Water Service Area Population Projections

	2010	2015	2020	2025	2030	2035
Huntington Beach Population	204,831	208,622	214,441	218,739	221,420	219,690
% Change/Period	-	1.85%	2.79%	2.00%	1.23%	-0.78%

Source: The Center for Demographic Research, California State University Fullerton, Adjusted

[8] Data based on CIMIS station #75 in Irvine, CA, the closest station to Huntington Beach; go to this website, establish a password and log into station 75 data: http://www.cimis.water.ca.gov/cimis/logon.do?forwardURL=/frontMonthlyEToReport&selTab=data; averages are based on the period this station has been in service, i.e., October 1987 through September 2010

1.4 HUNTINGTON BEACH PUBLIC WORKS DEPARTMENT AND FACILITIES

Public Works Department

Huntington Beach was incorporated as a city in 1909, is one of the oldest cities in Orange County, and is the third largest city in the County. It is a charter city, administered by a council/administrator government. From 1936 to 1964, the water system serving Huntington Beach was owned and operated by the Southern California Water Company. In 1964, the City purchased the private system and the City's Water Division was established as a Division of the Public Works Department. In 2003, the Public Works Sewer Section was incorporated into the Water Division to form the Utilities Division. The City is the principal water retailer within the City boundaries including the Sunset Beach area.

The Public Works Department is responsible for operating and maintaining wells, reservoirs, imported water connections, distribution pipelines, fire hydrants, water meters and related infrastructure, and for meter reading and billing. The Public Works Department also conducts comprehensive water quality testing and monitoring programs and develops long range operational and engineering plans designed to prepare for future needs and contingencies.

The West Orange County Water Board is a joint powers agreement between the cities of Huntington Beach, Garden Grove, Westminster and Seal Beach for the ownership and operation of two large capacity imported water transmission lines (OC-9 and OC-35). The Public Works Department performs operation and maintenance of the lines. The City of Huntington Beach is 56.1 percent owner and acts as General Manager/Engineer.

The Public Works Department establishes an annual operation budget managed through the Water Fund. Water Fund revenues are received from monthly water use and connection fees billed to water customers. By ordinance, revenues and expenditures for the Water Fund must balance, and the annual Water Fund budget is developed consistent with this premise. The annual budget includes programs for Engineering, Administration, Water Quality, Water Production, Water Maintenance, Water Meters, and Water Billing. Personnel, operating and capital outlay / equipment replacement costs are determined for each program. In addition, a capital projects budget is designed to address primarily replacements and upgrades of various water facilities and pipelines.

In 1995, the City Council adopted a Water Master Plan (WMP) and an accompanying Financial Plan. To fund improvements recommended in the WMP, a surcharge was established for water customers in December 1995. In addition, a capital facilities charge was instituted on all new residential development. Revenues from these charges are placed into the WMP Fund and used for capital improvements administered through the Public Works Department. The City updated its 1995 WMP in 2005 and is currently developing a 2011 WMP Update, which will address water needs for the current and future growth of the City.

Service Area

The Public Works Department supplies customers throughout the City of Huntington Beach, including the Sunset Beach area (which is undergoing the process of being annexed). *Figure 1-2* shows the City limits and service areas, as well as the location of key water supply facilities, as described below.

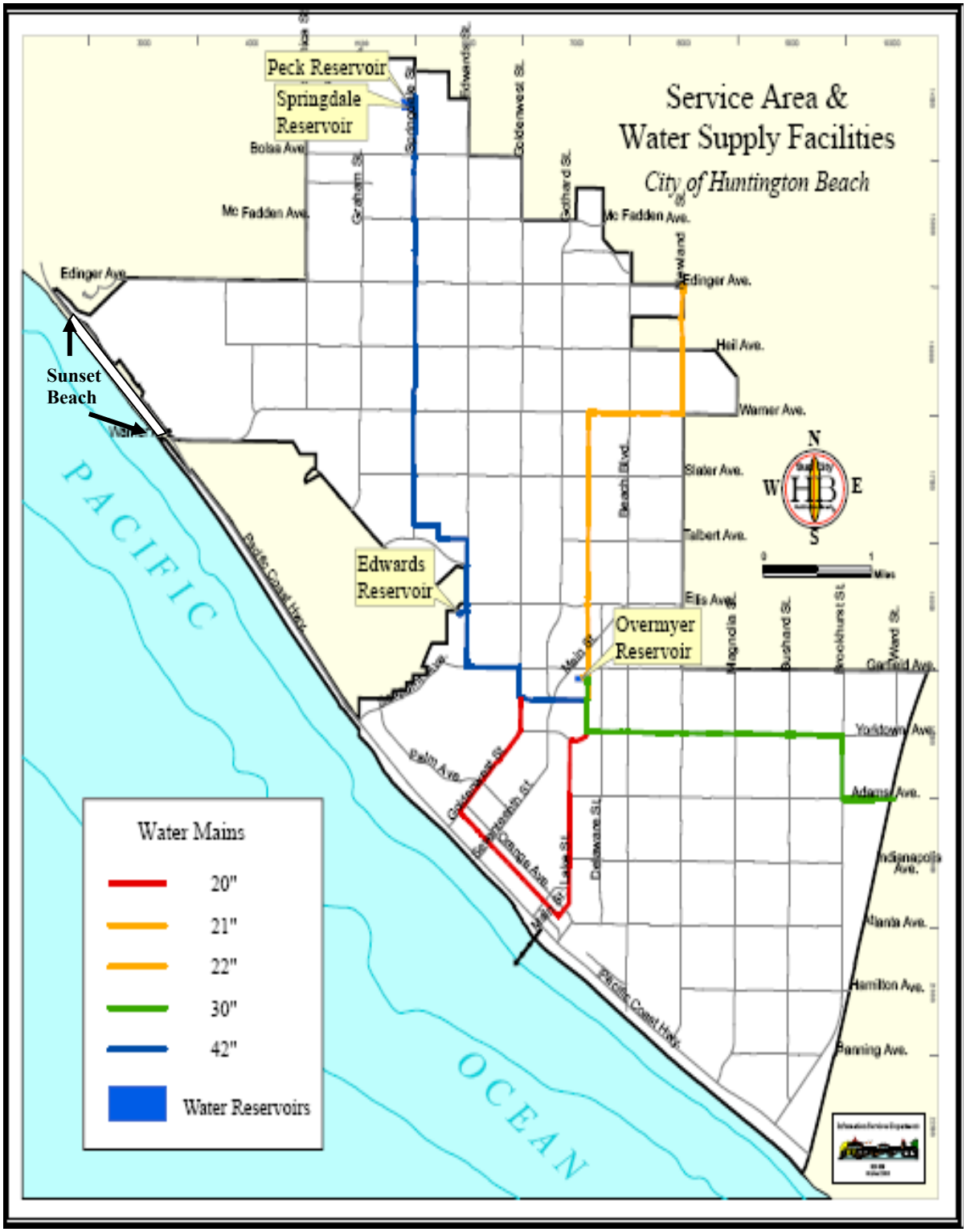
Water System Facilities

Groundwater is pumped from 10 active wells located throughout the City. The age, depth, design flow and production data for the active wells, wells not in use, and abandoned wells are summarized in Section 2.

MWDOC wholesales imported water to the City from Metropolitan. Metropolitan treats water supplied to the City at the Robert B. Diemer Filtration Plant in northern Orange County and the Joseph Jensen Filtration Plant in Granada Hills. The City's water distribution system is connected to Metropolitan transmission mains at OC-9, OC-35 and OC-44 located respectively along the northeast, northwest, and southeast sides of the City.

The Public Works Department also operates four storage and distribution reservoirs with a combined capacity of 55 million gallons. The storage system is supported with four booster stations located at the reservoir sites. The booster pumps have a total capacity of 58,690 gallons per minute, which is adequate to keep the system pressurized under peak flow conditions.

Figure 1-2
City of Huntington Beach Water Service Area and Supply Facilities



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2 WATER SOURCES AND SUPPLIES

2.1 WATER SOURCES

The City works together with three primary agencies to insure a safe and high quality water supply, which will continue to serve the community in periods of drought and shortage. The agencies which work in concert to provide these services are the Metropolitan Water District of Southern California (Metropolitan), the Municipal Water District of Orange County (MWDOC) and the Orange County Water District (OCWD).

Metropolitan Water District of Southern California (Metropolitan)

Metropolitan was formed in the late 1920's. At that time, Orange County was mostly an agriculturally based economy with the cities of Santa Ana, Anaheim, and Fullerton as the primary centers of urban development. Although other cities and residential communities existed at that time, it was these three cities that joined ten others located in Southern California, to form Metropolitan in 1928. Collectively, these charter members recognized the limited water supplies available within the region, and realized that continued prosperity and economic development of Southern California depended upon the acquisition and careful management of an adequate supplemental water supply. This foresight made the continued development of Southern California and Orange County possible.

Metropolitan imports water from northern California via the State Water Project (SWP) and from the Colorado River Aqueduct (CRA) to supply water to most of southern California. As a wholesaler, Metropolitan has no retail customers, and distributes treated and untreated water directly to its 26 member agencies. One such member agency is MWDOC.

Metropolitan's service area is depicted in *Figure 2-1*.[9]

[9] Service area map extracted from Metropolitan's website at: http://www.mwdh2o.com/mwdh2o/pages/memberag/member03.html

Figure 2-1
Metropolitan Water District Service Area

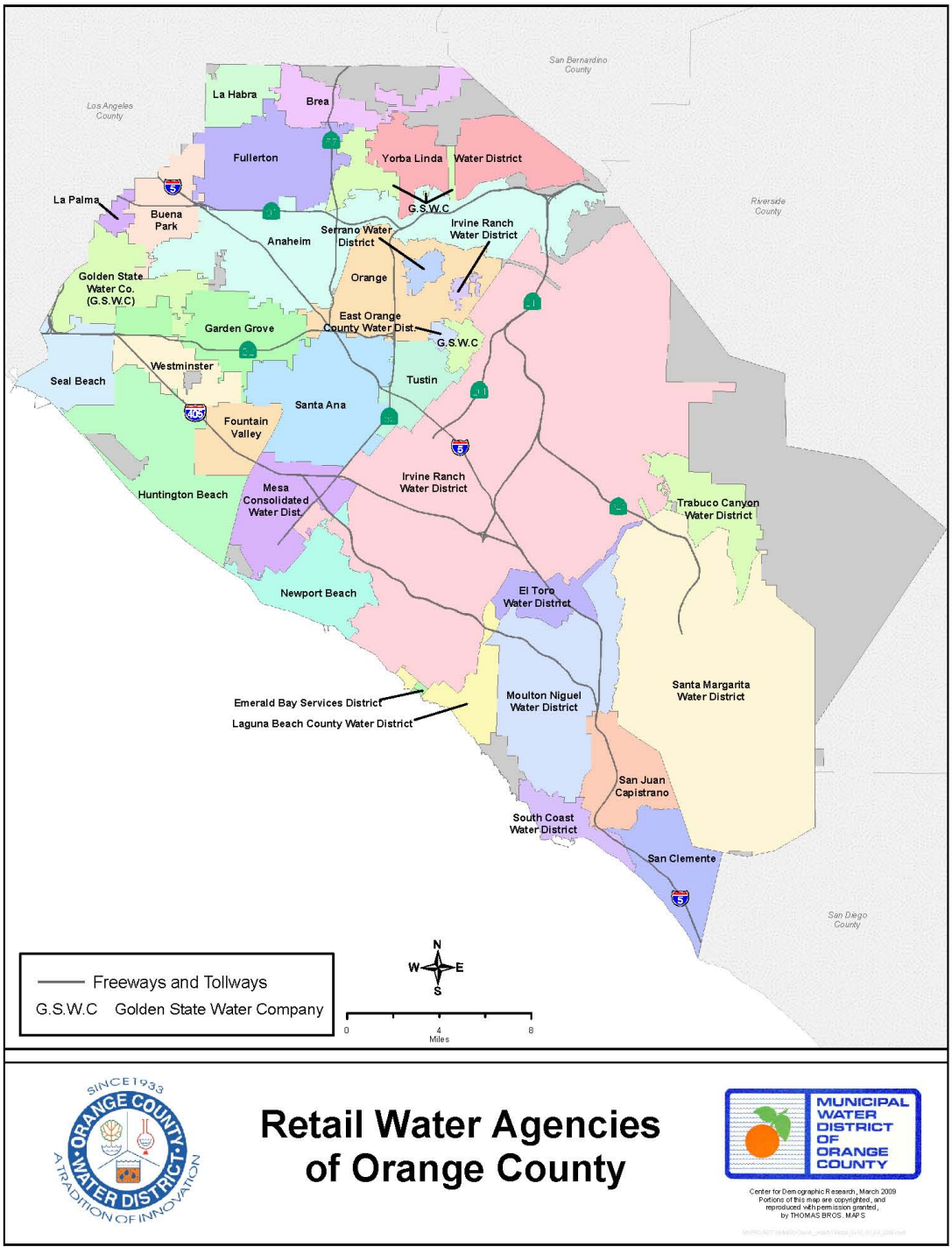
Municipal Water District of Orange County (MWDOC)

In 1951, MWDOC was formed to provide supplemental water to many purveyors within Orange County who were not Metropolitan member agencies. The communities surrounding the Lower Santa Ana Groundwater Basin realized that the local underground supply might not be sufficient to meet future demands of the area.

MWDOC was formed for the purpose of contracting with Metropolitan to acquire supplemental import water supplies from northern California and the Colorado River for use within the Orange County area. MWDOC is Metropolitan's second largest wholesale member agency. MWDOC represents 28 member agencies, including 14 special districts and 14 city water departments. MWDOC provides imported water to all of Orange County except for the cities of Anaheim, Fullerton and Santa Ana. It is through MWDOC that the City of Huntington Beach purchases imported water from Metropolitan. MWDOC's service area is depicted in *Figure 2-2*.[10]

[10] Service area map extracted from MWDOC website at: http://www.mwdoc.com/board/service-area

Figure 2-2
Municipal Water District of Orange County Service Area



Orange County Water District (OCWD)

In 1933, OCWD was formed by legislative act to protect and manage the County's vast, natural, underground water supply with the best available technology and to defend its water rights to the Santa Ana River Basin. As part of its original formation, OCWD was established by a special act (Act), of the State of California Legislature. This legislation is found in the State of California Statutes, Water – Uncodified Acts, Act 5683, as amended.[11] The basin is managed by OCWD under the Act, which functions as a statutorily-imposed physical solution. Section 77 of the Act states that, *'nothing in this act contained shall be so construed as to affect or impair the vested right of any person, association or corporation to the use of water.*[12] According to the Act, the City has the right to construct and operate groundwater-producing facilities in the basin. The Act also empowers OCWD to impose replenishment assessments and basin equity assessments on production and to require registration of water-producing facilities and the filing of certain reports; however, OCWD is expressly prohibited from limiting extraction unless a producer agrees.[13]

The basin is managed by OCWD for the benefit of municipal, agricultural and private groundwater producers. OCWD has 19 major producers extracting water from the Orange County groundwater basin (basin) serving a population of approximately 2.3 million.[14] Carefully managed by OCWD in collaboration with the other water and wastewater agencies, the growing population can be assured of a secure water supply from the groundwater source. Processes such as groundwater recharge of the Santa Ana River, recycling of wastewater, conservation and water use efficiency, and creative water purchases have aided in replenishing the groundwater basin to desired levels to meet required demands.

OCWD's service area is depicted in *Figure 2-3*.[15]

West Orange County Water Board (WOCWB)

As discussed earlier, the WOCWB is a Joint Powers Agency between four participating agencies. The members include the City of Huntington Beach, the City of Garden Grove, the City of Westminster, and the City of Seal Beach. The board consists of five members, with the City of Huntington Beach having two seats. The board meets quarterly and manages surface water deliveries from Metropolitan (through MWDOC) to the agencies. The board oversees the maintenance of two feeder pipelines that connect to the treated surface water supply. The pipelines have a capacity of 21 CFS and 45 CFS. Each of the member agencies has paid for the capacity of the feeder pipelines and directly pays MWDOC for the use of water.

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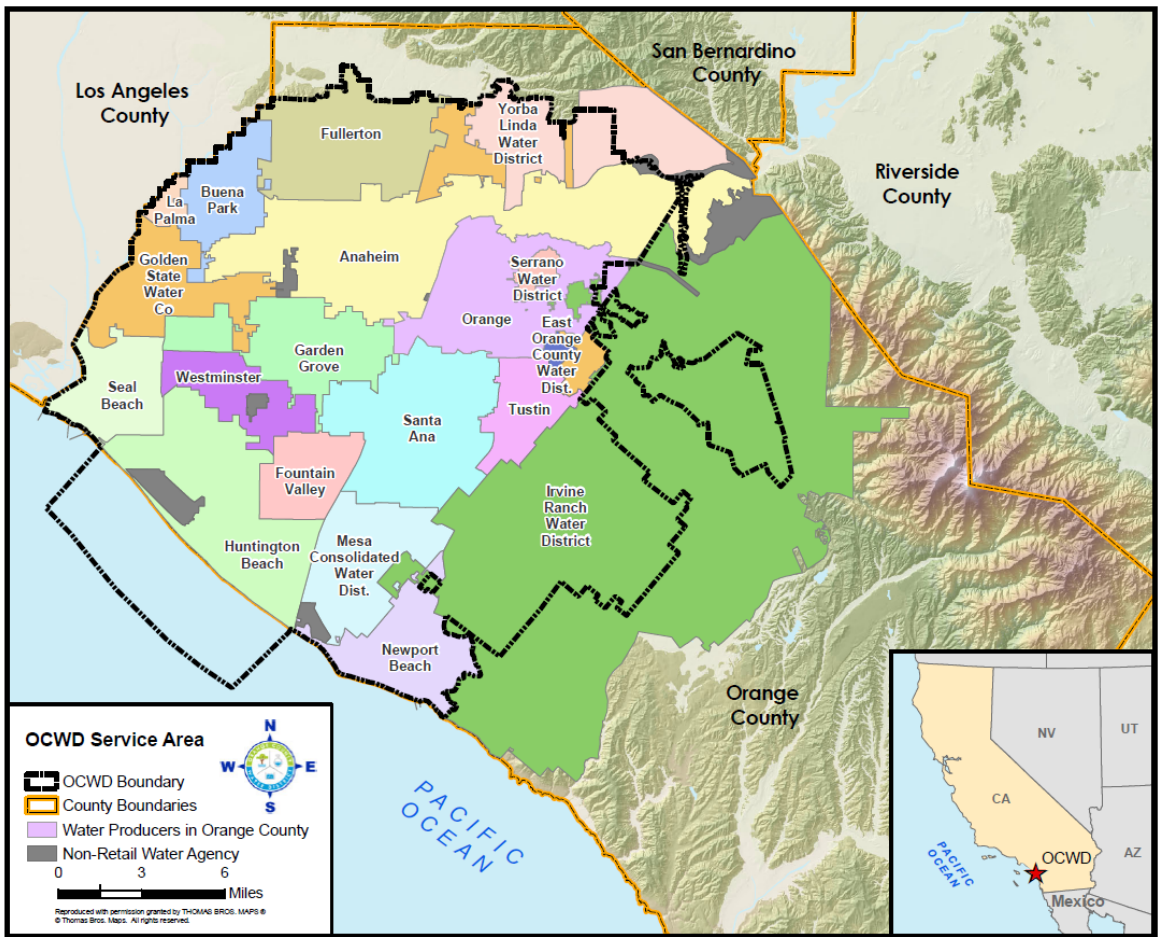
[11] Orange County Water District Act.
[12] Orange County Water District Act, Section 77.
[13] Orange County Water District Act, Sections 23 and 31.5.
[14] Per OCWD website at: http://www.ocwd.com/ca-20.aspx as of March 2011 Note: Population served by OCWD is different than MWDOC as the two agencies do not have overlapping boundaries
[15] Service area map extracted from OCWD website at: http://www.ocwd.com/ca-20.aspx

Figure 2-3
Orange County Water District Service Area



2.2 WATER SUPPLY

In the 2010 water year, the City pumped approximately 62 percent of its water supply from groundwater wells accessing the Santa Ana River groundwater basin and purchased 38 percent from Metropolitan through MWDOC. These percentages are established through OCWD's allowable Basin Pumping Percentage (BPP). The BPP is typically set by OCWD on an annual basis. However, OCWD does have the option of revising the BPP as needed. Actual percentages vary somewhat on an annual basis depending on the extent in-lieu delivery programs are implemented and groundwater levels (e.g., in 2003/04, the City's water supply was 66 percent imported water and 34 percent groundwater. Current and projected water supplies from imported water and groundwater are shown in Table 2.2-1 and described in subsequent sections.

Table 2.2-1
City of Huntington Beach
Current and Planned Water Supplies in AFY (Normal Water Year)

Water Supply Sources	2010 [1]	2010 [2]	2015	2020	2025	2030	2035
MWDOC - Import	11,197	21,370	25,180	29,230	33,270	31,810	30,420
Groundwater Production	18,271	20,070	20,220	20,480	20,970	21,280	21,490
Total Water Supply	**29,468**	**41,440**	**45,400**	**49,710**	**54,240**	**53,090**	**51,910**

[1] Actual 2010 supply used, refer to Appendix E.
[2] 2010 estimated available supply, under Normal Water Year, including surplus, see Table 5.2-1. Because 2010 was a Metropolitan Water Allocation Year and not a Normal Water Year, there was no surplus.

Imported Water

In 2010 approximately 38 percent of the City's water supply came from imported water wholesaled by MWDOC through Metropolitan. Imported water is delivered from northern California via the State Water Project and from the Colorado River, and is treated at the Robert B. Diemer and Joseph Jensen Filtration Plants before the water is delivered to the City.

The City maintains three imported water connections to the Metropolitan system. The characteristics of these connections are shown in Table 2.2-2. OC-9 is located at the intersection of Dale and Katella Streets in the City of Stanton, and enters the City at the intersection of Newland and Edinger Streets. OC-35 is located at the same intersection and enters Huntington Beach at the intersection of Springdale and Glenwood Streets. OC-9 and OC-35 are under the jurisdiction of the West Orange County Water Board. OC-44 is located at the East Orange County Feeder #2, and flow is delivered to the City's service area through a 24- to 42-inch transmission main jointly owned by the City and Mesa Consolidated Water District. A secondary metering station, also jointly owned, is located on Adams Avenue at the Santa Ana River.

Table 2.2-2
Imported Water Connections

Designation	Capacity	Zone Supply
OC-9	6,300 gpm	Zone 1
OC-35	9,000 gpm	Zone 1
OC-44	6,700 gpm	Zone 1
Total Capacity	**22,000 gpm**	

Source: Huntington Beach Water Master Plan and Financing Plan, 2005

The City participates, in coordination with MWDOC and the OCWD, in Metropolitan's In-lieu Program. Although this program has been temporarily placed on hold due

primarily to statewide water shortage issues, the program may be re-instituted when water supplies become more plentiful.

OCWD, MWDOC, and Metropolitan have developed a successful and efficient In-lieu Program to increase storage in the groundwater basin and anticipate working together on future programs. One such future program is the proposed Surplus Water Program.

The Surplus Water Program will allow the City to take direct Metropolitan deliveries into the City's distribution system in lieu of producing water from the Orange County groundwater basin. This In-lieu Program indirectly replenishes the basin by avoiding pumping. In the In-lieu Program, OCWD requests the City to limit pumping to defined volumes from specified wells. The City then takes replacement water through its import connections, which is purchased by OCWD from Metropolitan (through MWDOC). OCWD purchases the water at a reduced rate, and then bills the City the amount it would have had to pay for energy and the Replenishment Assessment (RA) if it had produced the water from its wells. The deferred local production results in water being left in local storage for future use.

Reservoirs

The City maintains four potable water storage reservoirs (Overmyer, Peck, Springdale, and Edwards Hill) with a total capacity of 55 million gallons. The City's supply sources fill these reservoirs when demands are low and pumps draw water from the reservoirs and pressurize it into the City's water system during demand periods.

Groundwater

Orange County Groundwater Basin

The Orange County Groundwater Basin (Basin) underlies the north half of Orange County beneath broad lowlands. The Basin covers an area of approximately 350 square miles, bordered by the Coyote and Chino Hills to the north, the Santa Ana Mountains to the northeast, the Pacific Ocean to the southwest, and terminates at the Orange County line to the northwest, where its aquifer systems continue into the Central Basin of Los Angeles County. The aquifers comprising the Basin extend over 2,000 feet deep and form a complex series of interconnected sand and gravel deposits.

Groundwater supply currently meets approximately 62 percent of the water supply demand for all of Orange County that overlies the Basin. This amount can be adjusted as needed based on Basin hydrologic conditions, but is typically set on an annual basis.

During the water year July 2008 to June 2009, total Basin production for all agencies was 324,147 AF compared with an overall demand of 456,913 AF. A total of 28,425 AF of supplemental water was used for groundwater replenishment and seawater barrier maintenance to prevent seawater intrusion from occurring in areas of the Basin adjacent

to the ocean in Huntington Beach, Costa Mesa and Fountain Valley.[16] The Basin generally operates as a reservoir in which the net amount of water stored is increased in wet years to allow for managed overdrafts in dry years. The Basin is recharged primarily from local rainfall (greater in wet years), base flow from the Santa Ana River (much of which is actually recycled wastewater from treatment plants in Riverside and San Bernardino Counties), imported water percolated into the Basin, and highly treated recycled wastewater directly recharged via spreading basins into the Basin. The production capability of the Basin is being increased as a result of a variety of specific management initiatives including increased wastewater reclamation.

The Basin is not adjudicated and based on the Department of Water Resources' official departmental bulletins, California's Groundwater Bulletin 118 Updated 2003 and Bulletin 160, the California Water Plan Update 2009, the Basin is not specifically identified as a basin in an overdraft condition. However, the California Water Plan Update does state that groundwater overdraft is a challenge for the South Coast Hydrologic Region[17], which includes the Basin. The Basin is considered in an overdraft condition by OCWD, however the groundwater levels and amount of overdraft fluctuate over time. OCWD continually monitors groundwater level trends and has collected data since 1962. OCWD's Groundwater Management Plan summarizes the accumulated overdraft and water level elevations within the basin.

Based on OCWD's July 2009 Groundwater Management Plan Update, the target accumulated overdraft is 100,000 AF[18]. An overdraft condition reduces localized high groundwater levels and increases the ability to recharge storm events from the Santa Ana River. OCWD estimates that the Basin can safely be operated on a short-term emergency basis with a maximum accumulated overdraft of approximately 500,000 AF. The accumulated overdraft on June 30, 2009 was estimated to be 347,000 AF.[19] With an accumulated overdraft of 200,000 AF, the basin is considered 99.7 percent full; with an overdraft of 400,000 AF it is considered 99.4 percent full with a full basin containing 66 MAF of groundwater in storage.[20]

In an effort to eliminate long-term overdraft conditions, OCWD developed a comprehensive computer-based groundwater flow model to study and better understand the basin's reaction to pumping and recharge. OCWD has also implemented a monitoring program to track dynamic conditions including groundwater production, storage,

[16] Orange County Water District, 2008-09 Engineer's Report available on OCWD's website at: http://www.ocwd.com/Publications---Newsletters/ca-43.aspx , Executive Summary, page 1

[17] The California Water Plan Update 2009 is available on DWR's website at: http://www.waterplan.water.ca.gov/docs/cwpu2009/0310final/v3_southcoast_cwp2009.pdf ; references to groundwater challenges can be found in the Volume 3 Regional Update for the South Coast Region

[18] Orange County Water District, Groundwater Management Plan, July 2009 Update available on OCWD's website at: http://www.ocwd.com/Publications---Newsletters/ca-43.aspx, page 6-11; an electronic copy of this document will also be provided on CD to DWR (Appendix H)

[19] Orange County Water District, 2008-09 Engineer's Report available on OCWD's website at: http://www.ocwd.com/Publications---Newsletters/ca-43.aspx , page 4

[20] Orange County Water District, Groundwater Management Plan, July 2009 Update available on OCWD's website at: http://www.ocwd.com/Publications---Newsletters/ca-43.aspx, page 6-9

elevations, seawater intrusion, and quality. Components of this monitoring program include the request for the City and other groundwater producers to provide their groundwater production to OCWD on a monthly basis, yearly measurement of groundwater levels, water quality monitoring, and prevention of sea water intrusion.

Basin Management Strategies

Since its formation in 1933, OCWD has invested in seawater intrusion control (injection barriers), recharge facilities, wastewater recycling, laboratories and basin monitoring to effectively manage the basin. Some of these programs include:

Groundwater Replenishment System – As of January 2008, OCWD began recharging recycled water from the Groundwater Replenishment System (GWRS). The GWRS, the largest water purification project of its kind in the world, can currently produce up to 72,000 AFY of recycled water, and has increased Orange County's water independence by providing a locally controlled, drought-proof supply of safe, high-quality water. The Environmental Impact Report (EIR) has been completed and design is underway for a GWRS Expansion Project to increase production to over 101,000 AFY. Other processes such as recycling of wastewater, conservation and water use efficiency programs, and creative water purchases have aided in replenishing the basin to desired levels to meet required demands.

Recharge Facilities – OCWD currently owns and operates approximately 1,000 acres of recharge spreading facilities located in cities of Anaheim and Orange, adjacent to the Santa Ana River (SAR) and Santiago Creek. OCWD has built a recharge system that provides the majority of groundwater supplied by the District. The 17 major recharge facilities in the Anaheim/Orange area are grouped into four major components: the Main River System, the Off-River System, the Deep Basin System, and the Burris Pit/Santiago System. Each system has a series of percolation spreading basins, either shallow or deep, whose sidewalls and bottoms allow for percolation into the underlying aquifer.

Seawater Intrusion Barriers – OCWD's Talbert Seawater Intrusion Barrier is composed of a series of injection wells that span the 2.5-mile-wide Talbert Gap between the Newport and Huntington mesas. The Talbert Barrier wells can inject approximately 42 million gallons per day (mgd) of water into four aquifer zones. Injecting water through the wells forms a hydraulic barrier to seawater that would otherwise migrate inland toward areas of groundwater production.

The Alamitos Seawater Intrusion Barrier is composed of a series of injection wells that span the Los Angeles/Orange County line in the Seal Beach-Long Beach area. It is operated by the Los Angeles County Department of Public Works (LACDPW) in cooperation with OCWD and the Water Replenishment District (WRD). The source of this water is a blend of purified wastewater from WRD and potable supplies from Metropolitan. Also, the Alamitos Seawater Intrusion Barrier includes four extraction

wells located seaward of the injection barrier to create a pumping trough to remove the degraded brackish groundwater.

Groundwater Monitoring – OCWD has one of the most sophisticated groundwater monitoring programs in the country. The District runs more than 350,000 analyses of water from more than 650 wells every year. OCWD performs nearly 50 percent more water quality tests than it is required to do in order to ensure the highest water quality possible. In 2004, OCWD completed a 10-year, $10 million Santa Ana River Water Quality and Health Effects Study, which demonstrated the safety of SAR water as a source for recharging the groundwater basin. A panel of nationally recognized experts provided an independent review of the study and validated its positive results.

OCWD Long-Term Facilities Plan (LTFP)

OCWD prepared a draft LTFP in 2009 to evaluate potential basin and water quality enhancement projects that may be implemented in a 20-year horizon or planning period. The LTFP was proposed to do the following:

- Evaluate projects to cost effectively increase the amount of sustainable basin production and protect water quality
- Develop an implementation program for the recommended projects
- Establish the basin's future maximum (target) annual production amount and correspondingly how much new recharge capacity would be required
- Estimate impacts to potential future Replenishment Assessment (RA) rates and long-term Basin Plan Percentages (BPP) which will be discussed in following sections
- Evaluate potential annexations

Due to difficulties related to the annexation of new lands, annexation was removed from the draft LTFP and subsequent EIR and the revised LTFP have been adopted by the OCWD Board as a planning document.

The LTFP utilizes information recently developed in OCWD's Groundwater Management Plan and Recharge Development Study. The LTFP includes a master list of developed and proposed projects. The various projects are grouped into five categories: (1) recharge facilities, (2) water source facilities, (3) basin management facilities, (4) water quality management facilities, and (5) operational improvements facilities. Each project is evaluated using criteria such as technical feasibility, cost, institutional support, functional feasibility, and environmental compliance. The LTFP includes an implementation plan for the 28 recommended projects over the 20 year planning period.

OCWD Groundwater Management Plan

As previously referenced, OCWD adopted an update to its 2004 Groundwater Management Plan (GWMP) in July 2009. The GWMP 2009 Update provides information on District operations, lists projects completed since publication of the 2004 report, and discusses plans for future projects and operations. Over fifteen major projects completed between 2004 and 2008 have improved District operations, increased groundwater recharge capacity, and improved water quality.[21] The GWMP complies with SB 1938, passed in 2002, which includes a list of items to be included in a GWMP. The GWMP's objectives include (1) protecting and enhancing groundwater quality, (2) cost-effectively protecting and increasing the basin's sustainable yield, and (3) increasing the efficiency of OCWD's operations.[22] Various programs, policies, goals, and projects are defined in the GWMP to assist OCWD staff in meeting these objectives. The potential projects described in the GWMP are discussed in further detail in the LTFP. The GWMP describes the following:

- Background and purpose of the GWMP
- Hydrogeology of the basin
- Range of activities and management programs, including groundwater monitoring, groundwater quality management, production management, recharge water supply, and improvement projects
- Historical and future water demands and integrated demand/supply management strategies
- Financial management programs
- Recommendations for continued proactive basin management

Basin Production Percentage

As stated, the Basin is unadjudicated. All pumpers within the Basin are permitted to pump from the Basin, but OCWD is charged with managing the groundwater basin. OCWD manages the Basin largely through the Basin Production Percentage (BPP) that it establishes each water year.

The BPP is set based on groundwater conditions, availability of imported water supplies, Santa Ana River runoff, and Basin management objectives. In essence, the BPP represents a set percentage identifying the amount of groundwater all pumpers in the Basin can pump without paying a high "pumping tax" or Basin Equity Assessment to OCWD (described below). Thus, for example, if OCWD establishes a BPP of 65%, all pumpers within the Basin, including the City, can supply 65% of their water needs from groundwater supplies at a cost significantly less than the cost of imported water. The

[21] Orange County Water District, Groundwater Management Plan Update, July 9, 2009.
[22] Ibid.

BPP is a major factor for the City in determining the cost of groundwater production. Groundwater production equal to or less than the BPP pays a replenishment assessment (RA). Funds collected by OCWD through RA payments made by all producers in the basin are used to fund groundwater replenishment and recharge programs aimed at ensuring the long-term viability and stability of the Basin.

If groundwater production greater than the BPP occurs, a Basin Equity Assessment (BEA) is assessed against the producer of that amount of groundwater produced in excess of the BPP. The BEA is an additional fee (i.e., a higher "pumping tax") paid on each acre foot of water pumped above the BPP, making the total cost of that water to the City equal to the cost of Tier 2 imported water from Metropolitan. Thus, the BPP creates pricing incentives to ensure that groundwater producers pump within the framework established by the BPP.

Like funds collected by OCWD through the RA, funds collected by OCWD through the BEA are also used to fund groundwater replenishment, and recharge and recycling programs aimed at ensuring the long-term viability and stability of the Basin. The programs funded by the RA and the BEA include all of the groundwater replenishment, recharge, and recycling programs discussed herein. Such flexibility in producing over the BPP guarantees the City and other water utilities in Orange County the ability to provide water to their customers during periods of varying water availability.

Since the BPP was originally established in 1962, it has varied from 62 to 89 percent. The average BPP over its 42-year history is 71.1 percent. Based on discussions with OCWD staff and background analysis provided by OCWD dated September 2010, the current sustainable BPP was determined to be 62 percent, which is also where it was set for the 2010-11 year. Long-term projections of the BPP range from 62 to 65 percent plus or minus 5 percent based on a myriad of factors.

When Metropolitan has an abundance of water, they may choose to activate their In-Lieu Program, where imported water is purchased in-lieu of pumping groundwater. This is a special program supported by OCWD, MWDOC and Metropolitan, which allows some agencies to pump above the BPP without penalty of the BEA. Due to recent water shortages, this program was not utilized since 2006-07, but is being reinstated in the Spring of 2011 due to the wet water year.

City Wells

Within the City, groundwater for potable use is produced from ten operating wells that vary in depth from 306 feet to 996 feet, with production varying from 350 gallons per minute (gpm) to 3,400 gpm, with a total estimated system capacity of approximately 25,050 gpm as shown in Table 2.2-3. All wells are located within the City of Huntington Beach accessing the Orange County Groundwater Basin (precise locations not divulged for security purposes).

One City well, Meadowlark No. 2, is used solely for irrigation of the Meadowlark Golf Course and not part of the potable water system.

Table 2.2-3
City of Huntington Beach Active Wells

Well	Year Drilled	Well Depth (feet)	Capacity (gpm)	Normal Operation (gpm)
HB 1[(a)]	1962	306	750	350
HB 3A	1994	716	2,500	1,750
HB 4	1967	804	500	450
HB 5	1969	820	3,000	3,000
HB 6	1973	810	3,000	2,500
HB 7	1975	891	3,400	3,400
HB 9	1981	996	3,000	1,500
HB 10	1981	960	3,400	2,700
HB 12	2006	800	3,000	-[(b)]
HB 13 [(c)]	2001	800	2,500	2,500
Total (gpm)			25,050	18,150

(a) To be separately evaluated for feasibility to be re-drilled with capacity increased to 750 gpm; schedule to be determined.

(b) HB 12 taken out of service due to water quality issues (high chloride). May be reinstated with production reduced to 500-750 gpm; schedule to be determined.

(c) Per 2005 Water Master Plan, permanent wellhead facilities will be constructed to replace existing temporary facilities; schedule to be determined.

Table 2.2-4 summarizes the amount of groundwater pumped by the City for the last five years. Table 2.2-5 shows the total amount of groundwater projected to be pumped in future years.

Table 2.2-4
Amount of Groundwater Pumped (AFY)

Well No.	2006	2007	2008	2009	2010
Goldenwest No. 4 [(a)]	52.9	79.2	87.5	62.2	23.9
Meadowlark No. 2	223.1	282.4	245.7	231.0	203.2
HB 1	542.4	615.1	419.3	482.0	303.6
HB 3A	1,980.5	2,874.6	2,835.4	2,227.8	2,087.2
HB 4	329.3	160.3	522.0	316.1	371.5
HB 5	3,299.0	3,369.3	4,379.7	4,502.7	4,219.5
HB 6	1,775.0	4,088.6	2,853.3	1,949.1	1,259.9
HB 7	3,117.2	1,479.9	4,561.1	2,885.9	3,777.1
HB 8	0.0	0.0	0.0	0.0	0.0
HB 9	2,518.1	1,195.2	941.9	716.6	755.0
HB 10	2,925.5	4,102.5	3,705.6	5,160.6	1,106.8
HB 12	663.3	1,690.6	1,681.1	24.4	35.1
HB 13	2,116.4	1,854.6	3,340.1	3,298.3	4,128.6
Total	**19,542.7**	**21,792.3**	**25,572.7**	**21,856.7**	**18,271.4**

(a) Goldenwest No. 4 Well will be removed from service by beginning of 2011.

Note: Totals are based on a fiscal year of July 1 to June 30. For example, production shown for 2010 is for groundwater pumped from 7/1/09 to 6/30/10.

Table 2.2-5
Amount of Groundwater Projected to be Pumped (AFY)

Basin	2015	2020	2025	2030	2035
Orange County Groundwater Basin	20,210	20,460	20,930	21,220	21,410

Note: Groundwater demand is estimated to comprise 62% of the total demand based on a Normal Water Year and a BPP of 62%.

3 WATER QUALITY

3.1 WATER QUALITY OF EXISTING SOURCES

As required by the Safe Drinking Water Act, which was reauthorized in 1996, the City provides annual Water Quality Reports to its customers; also known as Consumer Confidence Reports (CCR). This mandate is governed by the Environmental Protection Agency (EPA) and the California Department of Public Health (CDPH) to inform customers of their drinking water quality. In accordance with the Safe Drinking Water Act, the City monitors a number of regulated and unregulated compounds in its water supply. The results from this testing were included in the City's 2010 Annual Water Quality Report[23], a copy of which was mailed to all residents of Huntington Beach. As noted in that report, the City of Huntington Beach Public Works Department vigilantly safe-guards its water supply and, as in years past, the water delivered to City residents meets the standards required by the state and federal regulatory agencies. As mentioned earlier, the City's sources of water currently include imported water supplies and groundwater.

3.1.1 Imported Water

The City receives imported water through MWDOC from Metropolitan, which receives raw water from northern California through the SWP and the Colorado River Aqueduct. Metropolitan water is treated in accordance with potable standards at filtration plants located in Southern California. The City receives its treated imported water from the Robert B. Diemer Filtration Plant located in Yorba Linda and the Joseph Jensen Filtration Plant located in Granada Hills.

Metropolitan Water District tests and treats its water for microbial, organic, inorganic, and radioactive contaminants as well as pesticides and herbicides. Protection of Metropolitan's water system continues to be a top priority. In coordination with its 26 member agencies, Metropolitan added new security measures in 2001 and continues to upgrade and refine procedures. Changes have included an increase in the number of water quality tests conducted each year (more than 300,000 tests are conducted for over 200 possible compounds) as well as contingency plans that coordinate with the Homeland Security Office.[24] Metropolitan also has one of the most advanced laboratories in the country where water quality staff performs tests, collect data, review results, prepare reports, and research other treatment technologies. Although not required to do so, Metropolitan monitors and samples substances that are not regulated but have captured scientific and/or public interest. Metropolitan has tested for chemicals such as perchlorate, methyl tertiary butyl ether (MTBE), and chromium VI among others.

[23] The City of Huntington Beach 2010 Annual Water Quality Report can be viewed on the City's website at: http://www.huntingtonbeachca.gov/files/users/public_works/consumer-confidence-report10.pdf

[24] Per Metropolitan's 2010 Regional Urban Water Management Plan, page 4-17 which can be viewed on their website at http://www.mwdh2o.com/mwdh2o/pages/yourwater/RUWMP/RUWMP_2010.pdf

Metropolitan's October 2010 Integrated Water Resources Plan (IRP) Update[25] notes that water quality is intrinsically tied to supply reliability. Additionally, Metropolitan's 2010 Regional Urban Water Management Plan indicates each of their major sources of water (the SWP and the CRA) has specific water quality problems. However, that Plan also notes "Metropolitan has not identified any water quality risk that cannot be mitigated."[26]

The major water quality concerns Metropolitan identified in its 2010 Regional Urban Water Management Plan include the following: (1) salinity; (2) perchlorate; (3) total organic carbon and bromide (disinfection byproduct precursors); (4) nutrients (as it relates to algal productivity); (5) arsenic; (6) uranium; (7) chromium VI; (8) N-nitrosodimethylamine (NDMA); and (9) pharmaceuticals and personal care products (PPCPs). Each of these constituents of concern, as well as one additional decreasing concern (MTBE) is addressed in further detail below.

Salinity

Water from the CRA has the highest level of salinity of all Metropolitan sources of supply, averaging 630 milligram per liter (mg/L) since 1976.[27] Several actions have been taken at the state and federal level to control Colorado River salinity including (1) the International Boundary and Water Commission approval of Minute No. 242, Permanent and Definitive Solution to the International Problem of the Salinity of the Colorado River in 1973; (2) the U.S. President's approval of the Colorado River Basin Salinity Control Act in 1974 and (3) the formation of the Colorado River Basin Salinity Control Forum. In 1975, water quality standards and a plan for controlling salinity were approved by the EPA.

In contrast, water from the SWP is significantly lower in TDS, averaging 250 mg/L over the long term in water supplied through the East Branch and 325 mg/L in water supplied through the West Branch. Because of the lower salinity, Metropolitan blends SWP water with Colorado River water to reduce the salinity in the water delivered to its customers. Metropolitan's board has adopted a salinity objective of 500 mg/L for blended imported water as defined in Metropolitan's Salinity Management Action Plan. Metropolitan estimates that the objective can be met in seven out of ten years. In the other three years, hydrologic conditions would result in increased salinity and reduced volume of SWP supplies.

Perchlorate in the Colorado River

Perchlorate, a contaminant of concern which can be found in rocket propellant and some types of munitions and fireworks, is believed to inhibit the thyroid's ability to process iodide and produce hormones required for normal growth and development. Perchlorate

[25] MWD's October 2010 Integrated Water Resources Update can be viewed on their website at http://www.mwdh2o.com/mwdh2o/pages/yourwater/irp/IRP2010Report.pdf

[26] Per Metropolitan's 2010 Regional Urban Water Management Plan, page 4-1 which can be viewed on their website at http://www.mwdh2o.com/mwdh2o/pages/yourwater/RUWMP/RUWMP_2010.pdf

[27] Ibid., page 4-3

has been detected at low levels in the Colorado River water supply. It also has the ability to quickly dissolve and become mobile in groundwater. Perchlorate is difficult to remove from water supplies with conventional water treatment. Successful treatment technologies include nanofiltration, reverse osmosis, biological treatment, and fluidized bed bioreactor treatment. Metropolitan continues to monitor perchlorate contamination of the Colorado River. Perchlorate levels in the Colorado River have been declining in recent years, following installation of remedial treatment systems at industrial point source locations in the Las Vegas area beginning in 1998. These efforts have reduced perchlorate levels entering the Colorado River from Las Vegas by up to 90 percent since 1998.

As a result of the aforementioned aggressive clean-up efforts, perchlorate levels in Colorado River water at Lake Havasu have decreased significantly in recent years from their peak of 9 micrograms per liter (µg/L) in May 1998. Since 2002, levels have remained less than 6 µg/L and have typically been less than 2 µg/L since June 2006. For comparison purposes, the California Department of Public Health (CDPH), on October 18, 2007, established a primary drinking water standard for perchlorate with a Maximum Contaminant Level (MCL) of 6 µg/L. There is currently no federal drinking water standard for perchlorate, but the USEPA is in the process of making its final regulatory determination for this contaminant[28]

In addition to the Lake Havasu site, Metropolitan also routinely monitors perchlorate at 34 locations within its system. Monitoring data from these locations reflect non-detectable levels (below 2 µg/L). Metropolitan has not detected perchlorate in the SWP since monitoring began in 1997.

Total Organic Carbon and Bromide (Disinfection By-Product Precursors)

SWP water supplies contain levels of total organic carbon and bromide that are a concern to Metropolitan's objective of maintaining safe drinking water supplies. When water is disinfected at treatment plants, certain chemical reactions can occur with these impurities that can form Disinfection Byproducts (DBP). DBPs include trihalomethanes (THMs) and haloacetic Acids (HAAs). THMs and HAAs have been found to cause cancer in laboratory animals. Inherent in any through-Delta water movement is the high organic and bromide loading imposed on the water from agricultural runoff and salt water intrusion. This poses significant treatment challenges to the receiving end users, like Metropolitan, when it comes to avoiding problems with DBPs and the formation of THMs. With this in mind, it is imperative that the quality of SWP water delivered to Metropolitan be maintained at the highest levels possible.

Water agencies such as Metropolitan began complying with new regulations to protect against the risks associated with DBP exposure in January 2002. This USEPA rule, known as the Stage 1 Disinfectants and Disinfection Byproducts (D/DBP) Rule, required water systems to comply with new MCLs by using appropriate treatment techniques to

[28] Ibid., page 4-8

improve control of DBPs. The USEPA then promulgated the Stage 2 D/DBP Rule in January 2006, which makes regulatory compliance more challenging, because it is now determined on a locational basis, rather than on a distribution system-wide basis.

To ensure the implementation of cost-effective solutions, source water quality improvements must be combined with appropriate water treatment technologies. In addressing this requirement, Metropolitan looked first at each of its five treatment plants. Two of those (Mills and Jensen) receive SWP water exclusively, while the other three (Skinner, Weymouth and Diemer) receive a blend of SWP and Colorado River water. In 2003, 2005, and 2010, Metropolitan completed upgrades to its Mills, Jensen and Skinner water treatment plants, respectively, to utilize ozone as its primary disinfectant. This ozonation process avoids the production of certain regulated disinfection byproducts that would otherwise form in the chlorine treatment of SWP water. The non-ozone plants utilizing blended water have met federal guidelines for these byproducts through managing the blend of SWP and Colorado River water. To maintain the byproducts at a level consistent with federal law, Metropolitan limits the percentage of SWP water used in each plant. Metropolitan's Board has also adopted plans to install ozonation at its other two blend plants (Weymouth and Diemer) in the coming years.

Nutrients

Increased nutrient loading (phosphorous and nitrogen compounds) can lead to the formation of algal and aquatic weed growth, noxious taste and odor compounds, algal toxins and an increase in quagga and zebra mussels and other invasive biological species. The formation or accumulation of these undesired elements has negative ramifications upon the efficiency of the water treatment and conveyance processes and inevitably leads to consumer complaints. Metropolitan has therefore taken action to minimize nutrient loading in both its SWP and CRA delivery sources as described in the following paragraphs.

Wastewater discharges, agricultural drainage and nutrient-rich soils in the California Delta all contribute to the high levels of nutrient loading entering SWP facilities. Metropolitan and other local water agencies have therefore been working with Delta area wastewater agencies in an effort to minimize these nutrient loadings. Metropolitan also has a comprehensive program to monitor and manage algae growth in its source water reservoirs. In some cases, these monitoring efforts, coupled with consumer taste and odor complaints, have resulted in the need to temporarily bypass some of these reservoirs, which can have a short-term impact on available water supplies.

Nutrient levels in the Colorado River are much lower than in the SWP, which allows Metropolitan to blend CRA water with SWP and thereby greatly reduce overall nutrient levels in the water supplied to its member agencies. Nevertheless, nutrient loading in the CRA system is still a concern given projected growth patterns in the Las Vegas area. For this reason, Metropolitan continues to work with entities along the Colorado River to promote good wastewater management practices, which lead to reduced phosphorous and nutrient loadings.

As a result of the aforementioned monitoring and management programs, Metropolitan believes there should be no impact on future availability of water supplies due to high nutrient loadings.

Arsenic in Surface Waters

Arsenic, which has been linked to certain cancers and skin conditions, is a naturally occurring element found in rocks, soil, water, and air. Arsenic from these sources can enter the water supply through the natural erosion of rocks, as well as the dissolution of ores and minerals. Arsenic can also be found in wood preservatives, alloying agents, certain agricultural applications, semi-conductors, paints, dyes, and soaps. Agriculture and industrial discharges from these sources can contribute to elevated levels of arsenic in drinking water supplies.

The MCL for arsenic in domestic water supplies was lowered to 10 µg/L (from 50 µg/L), with an effective date of January 2006 in the federal regulations, and an effective date of November 2008 in California's regulations for both groundwater and surface water supplies. Metropolitan water supplies have historically had low levels of arsenic and have therefore not required treatment to comply with this standard. However, some of Metropolitan's water supplies are supplemented by groundwater storage programs, which in some cases have arsenic concentrations near the MCL. In general, these groundwater storage projects are used to supplement supplies only during low SWP allocation years. In some instances, Metropolitan has restricted the use of such groundwater programs, thereby limiting the introduction of arsenic into the SWP. Metropolitan has also worked with one of its groundwater banking partners in constructing a pilot arsenic treatment facility to reduce arsenic concentrations in this supply source.

In April 2004, based on reported lung and urinary bladder cancer risk data, California's Office of Environmental Health Hazard Assessment (OEHHA) set a public health goal (PHG) for arsenic of 0.004 µg/L. Monitoring results reported on CDPH's website for the period 2002-2005 showed arsenic is ubiquitous in drinking water sources, reflecting its natural occurrence. Those results also show many sources have arsenic levels above the 10 µg/L MCL (e.g., Southern California drinking water sources containing arsenic concentrations over 10 µg/L include San Bernardino (64 sources), Los Angeles (48 sources), Riverside (26 sources), Orange (4 sources), and San Diego (5 sources)).[29]

In all cases, arsenic levels detected in Metropolitan's SWP and CRA source waters and water treatment plant effluent have been below the 10 µg/L MCL. Nevertheless, the state detection level for purposes of reporting arsenic is 2 µg/L. Between 2001 and 2008, arsenic levels in Metropolitan's water treatment plant effluents ranged from not detected (< 2 µg/L) to 2.9 µg/L. For Metropolitan's source waters, levels in Colorado River water ranged from not detected to 3.5 µg/L, while levels in SWP water ranged from not detected to 4.0 µg/L.

[29] Per CDPH website: http://www.cdph.ca.gov/certlic/drinkingwater/Pages/Arsenic.aspx - note the numbers reported on this site can change as the site is updated.

Uranium

Uranium is a contaminant of concern in the water from the Colorado River. A 16-million ton pile of uranium mine tailings is located approximately 750 feet from the river at Moab, Utah. Rainfall seeps through this pile and contaminates the local groundwater which flows to the river. Additionally, due to the proximity of the pile to the river, there is a potential for the tailings to enter the river as the result of a catastrophic flood event or other natural disaster.

Previous investigations have shown uranium concentrations within the pile near the Moab site, at levels significantly above the California MCL of 20 picocuries per liter (pCi/L). Metropolitan has been monitoring for uranium in the Colorado River Aqueduct and at its treatment plants since 1986 and at Lake Powell since 1998. Uranium levels measured at Metropolitan's intake have ranged from 1 to 6 pCi/L, which are well below the California MCL. Conventional drinking water treatment, as employed at Metropolitan's water treatment plants, can remove low levels of uranium, however these processes would not be protective if a catastrophic event washed large volumes of tailings into the Colorado River.

The U.S. Department of Energy (DOE) is responsible for remediating the site near Moab, which includes removal and offsite disposal of the tailings and onsite groundwater remediation. Metropolitan continues to track progress of the remediation efforts, provide the necessary legislative support for rapid cleanup, and work with Congressional representatives to support increased annual appropriations for this effort. Site remedial actions conducted since 1999 have focused on removing contaminated water from the pile and from underlying groundwater. Through 2009, over 2,700 pounds of uranium has been removed from contaminated groundwater.

DOE issued its Final Environmental Impact Statement in July 2005, which recommended permanent offsite disposal by rail to a disposal cell at Crescent Junction, Utah, located approximately 30 miles northwest of the Moab site. Such rail shipments began in April 2009, with over 1 million tons of mill tailings shipped to the Crescent Junction disposal cell through March 2010. DOE anticipates shipment of an additional two million tons of tailings by September 2011 with complete removal by 2025.

Another uranium-related issue, which could negatively impact CRA water supplies, began receiving attention in 2008 as a result of renewed worldwide interest in nuclear energy and the associated increase in uranium mining claims filed throughout the western United States. Of particular interest to Metropolitan were thousands of mining claims filed near Grand Canyon National Park and the Colorado River watershed. Metropolitan has since sent letters to the U.S. Secretary of Interior to highlight source water protection and consumer confidence concerns related to uranium exploration and mining activities near the Colorado River, and advocate for close federal oversight over these activities. In 2009, Secretary of Interior Ken Salazar announced a two-year hold on new mining claims on one million acres adjacent to the Grand Canyon to allow necessary scientific studies and environmental analyses to be conducted. In 2009, H.R. 644, the Grand Canyon

Watersheds Protection Act was introduced and if enacted, would permanently withdraw areas around the Grand Canyon from new mining activities.

Chromium VI

Like arsenic, chromium is a naturally occurring element found in rocks, soil, plants, and animals. Chromium III is typically the form found in soils and is an essential nutrient that helps the body use sugar, protein, and fat. Chromium VI is used in a number of industrial applications including electroplating, stainless steel production, leather tanning, textile manufacturing, dyes and pigments, wood preservation and as an anti-corrosion agent. Chromium occurs naturally in deep aquifers and can also enter drinking water through industrial discharges. In drinking water, chromium VI is very stable and soluble, whereas chromium III is not very soluble. Chromium VI is the more toxic form and is known to cause lung cancer in humans when inhaled, but the human health effects from ingestion are still a subject of conjecture.

There are no current drinking water standards for chromium VI. Total chromium (including chromium III and chromium VI) is regulated in California with an MCL of 50 µg/L. On August 20, 2009, the OEHHA released a draft PHG of 0.06 µg/L for chromium VI in drinking water. The PHG is a health-protective, non-regulatory level that will be used by CDPH in its development of an MCL. CDPH will set the eventual MCL as close to the PHG as technically and economically feasible.

Metropolitan monitors chromium levels in their source and treated waters and has found all samples to be below the State's 1 µg/L detection level for purposes of reporting, with the exception of the influent to the Mills Water Treatment Plant. Metropolitan's 2010 Regional Urban Water Management Plan reports the following findings with respect to chromium VI levels found in their source and treated waters:

- Colorado River chromium VI levels over the past 10 years were mostly not detected (<0.03 µg/L) but when detected, ranged from 0.03 – 0.08 µg/L.
- SWP chromium VI levels over the past 10 years ranged from 0.03 – 0.8 µg/L.
- Treated water chromium VI levels over the past 10 years ranged from 0.03 – 0.7 µg/L.
- The slight increase in chromium VI levels in treated water (as compared with Colorado River water) is caused from the oxidation (chlorination and ozonation) of natural background chromium (total) to chromium VI.
- Chromium VI in Metropolitan's groundwater pump-in storage programs in the Central Valley has ranged from non-detect (< 0.03 µg/L) to 9.1 µg/L with the average for the different programs ranging from 1.4 to 5.0 µg/L.
- Chromium VI has been detected in a groundwater aquifer on the site of a Pacific Gas and Electric (PG&E) gas compressor station located along the Colorado River near Topock, Arizona. However, monitoring results along the river, both

upstream and downstream of the Topock site, have ranged from non-detect (<0.03 µg/L) to 0.06 µg/L.

N-nitrosodimethylamine (NDMA)

N-nitrosodimethylamine (NDMA) is part of a family of organic chemicals called nitrosamines. NDMA is a byproduct of the disinfection of some natural waters with chloramines, which are used at MWD treatment plants as a secondary disinfectant. Both the USEPA and CDPH consider NDMA to be a probable human carcinogen. While CDPH has not yet established an MCL for NDMA, they did establish a 0.01 µg/L notification level in 1998. OEHHA also set a PHG for NDMA of 0.003 µg/L in 2006 and recommended that concentrations greater than 0.01 µg/L be included in a utility's annual Consumer Confidence Report.

Metropolitan has monitored its source waters (at treatment plant influents) and treated waters on a quarterly basis since 1999. Test results for NDMA in Metropolitan's system have ranged from non-detect (< 0.002 µg/L) to 0.014 µg/L.

Metropolitan is engaged in several projects, which will lead to a better understanding of the watershed sources and occurrence of NDMA precursors in their source waters. That information can then be used to develop treatment strategies aimed at minimizing NDMA formation in drinking water treatment plants and distribution systems. To date, special studies conducted by Metropolitan have shown the use of advanced oxidation processes can be effective in removing NDMA. Other treatment processes such as biological, membrane, and carbon adsorption, may also be effective, but have not yet been studied.

Pharmaceuticals and Personal Care Products

Pharmaceuticals and personal care products (PPCPs) are a growing concern to the water industry. Numerous studies have reported the occurrence of these emerging contaminants in treated wastewater and surface water, as well as in some finished drinking water in the United States and other countries. The sources of PPCPs in the aquatic environment can include treated wastewater, industrial discharges, agricultural run-off, and leaching from municipal landfills. There is no current evidence of human health risks from long-term exposure to the low concentrations (low ng/L; parts per trillion) of PCPs found in some drinking water. There are also no current regulatory requirements for PPCPs in drinking water.

In 2007, Metropolitan implemented a monitoring program to measure the occurrence of PPCPs and other organic wastewater contaminants in its treatment plant effluents and at selected source water locations within the Colorado River and SWP watersheds. Some PPCPs were detected at very low ng/L levels, which is consistent with reports from other utilities. Metropolitan will continue to refine their analytical methods, which will lead to a better understanding of these occurrence issues and their impact on drinking water sources in California.

As noted in Huntington Beach's 2010 Annual Water Quality Report, the City has installed a Pharmaceutical Drug Disposal box in the lobby of the Huntington Beach Police Department. The Pharmaceutical Disposal Program was implemented so citizens can properly dispose of old prescription medications, and not put them in the trash or flush them down the toilet.

Methyl Tertiary Butyl Ether (MTBE) – A Decreasing Concern

Although no longer a major concern, Methyl tertiary-butyl ether (MTBE) is still somewhat of a concern. MTBE was the primary oxygenate in virtually all the gasoline used in California, prior to discovering it contaminated groundwater supplies and had also been found in surface water supplies. Following that discovery, MTBE was banned in California as of December 31, 2003 and was subsequently replaced by ethanol which is now the primary oxygenate in use. CDPH has adopted a primary MCL of 13 µg/L for MTBE based on carcinogenicity studies in animals. MTBE has a California secondary MCL of 5 µg/L, which was established based on taste and odor concerns.

MTBE was introduced into surface water bodies from the motor exhausts of recreational watercraft. With that in mind, Metropolitan has taken steps at Diamond Valley Lake and Lake Skinner, to reduce the potential for MTBE contamination. In 2003, Metropolitan's Board banned the use of MTBE fuel in these reservoirs and authorized implementation of a monitoring program to detect the presence of MTBE in the lakes. In recent years, MTBE monitoring test results in source waters have remained at non-detectable levels (below 3 µg/L).

MTBE still presents a significant problem to local groundwater basins. Leaking underground storage tanks and previous poor fuel handling practices at local gas stations may continue to provide a large source of MTBE. MTBE, which is very soluble in water and has low affinity for soil particles, moves quickly into the groundwater. Some local groundwater producers within MWD service area have been forced to abandon some wells due to MTBE contamination. Unfortunately, MTBE is also resistant to chemical and microbial degradation in water, thereby making treatment more difficult than that employed to remove other gasoline components. However, a combination of an advanced oxidation process (typically ozone and hydrogen peroxide) followed by granular activated carbon has been found to be effective in reducing the levels of these contaminants.

Although some groundwater supplies remain contaminated with this highly soluble chemical, contamination of Metropolitan's surface water supplies are no longer a problem. Improved underground storage tank requirements and monitoring procedures, as well as the phase-out of MTBE as a fuel additive, has decreased the likelihood of MTBE groundwater problems in the future.

Imported Water Quality Programs

Metropolitan supports and is involved in many programs that address water quality concerns related to both the SWP and Colorado River supplies. Some of the programs and activities include:

- Source Water Protection – Protecting the source of water supplies is of paramount importance to providing safe and reliable drinking water. CDPH requires large utilities delivering surface water to complete a Watershed Sanitary Survey every five years in accordance with California's Surface Water Treatment Rule, Title 22 of the California Code of Regulations. The purpose of this survey is to identify possible sources of drinking water contamination, evaluate source and treated water quality, and recommend watershed management activities to protect and improve source water quality. The most recent sanitary surveys for Metropolitan's water sources were completed in 2005 and 2006[30]. The next Sanitary Surveys for the watersheds of the Colorado River and the SWP will report on water quality issues and monitoring data through 2010. Metropolitan has an active source water protection program and continues to advocate on behalf of numerous SWP and Colorado River water quality protection issues.
- Support of SWP Water Quality Programs – Metropolitan continues to support DWR policies and programs aimed at maintaining or improving the quality of SWP water delivered to Metropolitan. Some examples of this support include:
    - Support of the DWR policy to govern the quality of non-project water conveyed by the California Aqueduct.
    - Support of the expansion of DWR's Municipal Water Quality Investigations Program beyond its Bay-Delta core water quality monitoring and studies to include enhanced water quality monitoring and forecasting of the Delta and SWP. These programs are designed to provide early warning of water quality changes that will affect treatment plant operations both in the short-term (hours to weeks) and seasonally.
- Water Quality Exchanges – Metropolitan has implemented selective withdrawals from the Arvin-Edison storage program and exchanges with the Kern Water Bank to improve water quality. Although these programs were initially designed to provide dry-year supply reliability, they can also be used to store SWP water during periods of good water quality and then allow for their withdrawal during times of lesser water quality, thus providing better overall water quality through dilution of SWP water deliveries.
- Water Supply Security – In 2001, Metropolitan added new security measures to protect its water supply storage and conveyance facilities and continues to upgrade and refine those procedures. Changes have included an increase in the

[30] Sanitary Surveys include Metropolitan's *Colorado River Watershed Sanitary Survey, 2005 Update* and State Water Project Contractors Authority *California State Water Project Watershed Sanitary Survey, 2006 Update*.

number of water quality tests conducted each year (Metropolitan now conducts over 300,000 analytical tests on samples collected within their service area and source waters), as well as contingency plans that coordinate with the Homeland Security Office's multicolored tiered risk alert system.

3.1.2 Groundwater

OCWD manages the City's groundwater basin and conducts a comprehensive water quality monitoring program. In 2008, OCWD collected nearly 14,000 groundwater samples from almost 700 wells. The water quality data collected from these wells is used to monitor the impacts of basin extraction, determine the effectiveness of the seawater intrusion barriers, assess the impacts of historic and current land uses, and serve as a sentinel or early warning of emerging contaminants of concern.[31]

OCWD's water quality monitoring programs are broadly classified into three categories; (1) compliance with permits and drinking water regulations; (2) OCWD Board approved projects for research and other purposes; and (3) basin management. OCWD's extensive groundwater quality management program allows the agency to address current issues and develop strategies to anticipated and resolve future issues.

OCWD's July 2009 Groundwater Management Plan Update has a section devoted solely to groundwater quality management. The groundwater quality issues facing OCWD and the City and the programs implemented to address those issues are summarized in the following sections, which have been extracted from the July 2009 Groundwater Management Plan Update. Areas of specific concern include: (1) Salinity; (2) Nitrates; (3) Volatile Organic Contaminants; (4) MTBE; (5) NDMA; (6) 1,4-Dioxane; (7) Perchlorate; (8) Emerging Contaminants; and (9) Colored Groundwater.

Salinity

High concentrations of salts can contaminate groundwater supplies, constrain implementation of water recycling projects, and cause other negative economic impacts such as the need for increased water treatment by residential, industrial and commercial users. Sources of salinity in water used to recharge the groundwater basin include Santa Ana River water, imported water, shallow groundwater within Orange County, seawater migrating into the basin, precipitation, and legacy contamination from historical agricultural operations. Water treatment plants, also referred to as desalters, have been built in Riverside and San Bernardino Counties to reduce salinity levels in water supplies. Within Orange County, desalters in Tustin and Irvine are reducing salinity levels in the groundwater basin. The GWR System provides a dependable supply of low salinity water that is expected to reduce the basin salt imbalance by approximately 47,000 tons/year.

[31] Orange County Water District, *Groundwater Management Plan, July 2009 Update* available at: http://www.ocwd.com/Publications---Reports/ca-43.aspx .

Nitrates

Nitrates are one of the most common and widespread contaminants in groundwater supplies. Elevated levels of nitrates in soil and water supplies originate from fertilizer use, animal feedlots and wastewater disposal systems. OCWD conducts an extensive program to protect the basin from nitrate contamination, including operating 450 acres of wetlands in the Prado Basin to naturally remove nitrate before the water enters the District's recharge facilities.

The early agricultural practices with OCWD contributed to the high concentrations of nitrates in the shallow groundwater. Although nitrates are present throughout the basin, only a small number of areas exceed the MCL. Ninety-eight percent of the drinking water wells pumping from the Orange County groundwater basin meet the nitrate drinking water standard. The two percent that do not meet the nitrate standard are treated to reduce nitrate levels prior to the water being served to customers.

Volatile Organic Compounds (VOC)

VOCs in groundwater come from a number of sources. From the late 1950s through early 1980s, VOCs were used for industrial degreasing in metals and electronics manufacturing. Other common sources include paint thinners and dry cleaning solvents.

VOC contamination is found in several locations in the basin. In 1985, a contamination site was discovered beneath the former El Toro MCAS. Monitoring wells at the El Toro site installed by the U.S. Navy and OCWD delineated a one-mile wide by three-mile long VOC plume, comprised primarily of trichloroethylene (TCE). Beneath the former Air Station, VOC contamination was primarily found in the shallow groundwater up to 150 feet below the ground surface. Off-base, to the west, the VOC plume is in deeper aquifers from 200 to 600 feet deep.

Another VOC contamination site was found in portions of the shallow aquifer in the northern portion of the Orange County in the cities of Fullerton and Anaheim. Although not directly used for drinking water supplies, groundwater in the shallow aquifer eventually flows into the deeper principal aquifer, which is used for potable water supplies. To date, two city of Fullerton production wells have been removed from service and destroyed due to VOC contamination in that area. Currently, there are no production wells in that area that extract water from the shallow aquifer. Elevated concentrations of perchloroethylene (PCE), TCE, and perchlorate were detected in IRWD's Well No. 3, located in Santa Ana. OCWD is currently working with the Regional Board and the California Department of Toxic Substances Control to require aggressive cleanup actions at nearby sites that are potential sources of the contamination. No City of Huntington Beach wells have been impacted by VOC contaminants.

Methyl Tertiary-Butyl Ether (MTBE)

During the 1980s, gasoline hydrocarbons of greatest risk to drinking water were benzene, toluene, ethylbenzene, and xylenes, collectively known as BTEX chemicals. Although leaking underground fuel tanks were identified throughout the basin, these chemicals typically were degraded by naturally-occurring microbes that allowed clean up by natural attenuation or passive bioremediation.

As mentioned in previous sections of this Plan, MTBE, a more recent additive to gasoline aimed at reducing air pollution contributed to the widespread contamination of some groundwater supplies. MTBE is a serious threat to groundwater quality because it sorbs weakly to soil and does not readily biodegrade. The greatest source of contamination comes from releases from underground fuel tanks.

Drinking water wells in the basin are tested annually for VOC analytes including MTBE. OCWD continues to work with local water agencies such as the City to monitor for MTBE and other fuel-related contaminants to identify areas that may have potential underground storage tank problems and releases resulting in groundwater contamination.

N-nitrosodimethylamine (NDMA)

OCWD monitors NDMA levels in the groundwater basin. As previously noted, the California Notification Level for NDMA is 0.01 µg/L. OCWD has found the concentration of NDMA in the Santa Ana River at Imperial Highway to be typically less than 0.002 µg/L. At OCWD's GWR System treatment facility in Fountain Valley, NDMA concentrations are maintained below California's Notification Level through a combination of source control measures, reverse osmosis treatment, and advanced oxidation treatment using ultraviolet light and hydrogen peroxide.

1,4-Dioxane

A suspected human carcinogen, 1,4-dioxane, is used as a solvent in various industrial processes such as the manufacture of adhesive products and membranes and may occur in consumer products such as detergents, cosmetics, pharmaceuticals, and food products. In 2002, OCWD detected elevated levels of 1,4-dioxane in nine production wells exceeding the California Action Level. These wells were temporarily shutdown with a loss of 34 mgd of water supply. Further investigation traced the contaminant to one industrial discharger that was discharging 1,4-dioxane into wastewater collected by OCSD. This discharge was affecting water that was treated by Water Factory-21 and injected into the Talbert Seawater Barrier. When the discharger voluntarily ceased discharge of 1,4-dioxane, concentrations declined. Additional monitoring data showed low concentrations, the CDPH determined that the water was not a significant risk to health, and the wells were returned to service.

Perchlorate

Perchlorate has been detected at wells distributed over a large area of the groundwater basin. Based on data from 217 active production wells collected from 2006 through 2009 and a perchlorate detection limit of 2.5 micrograms per liter, only seventeen percent of the wells had detectable concentrations of perchlorate. For those wells with detectable amounts of perchlorate, 89 percent had perchlorate concentrations below the California primary drinking water standard of 6 micrograms per liter. Four of the 217 active production wells had perchlorate concentrations greater than 6 micrograms per liter. It is important to note that water delivered for municipal purposes meets the primary drinking water standard. Groundwater from production wells that have perchlorate concentrations over the primary drinking water standard is treated to reduce the perchlorate concentration below the primary drinking water standard prior to delivery for municipal usage.

Sources of perchlorate in the groundwater basin may include:

- Fertilizer application;
- Water imported from the Colorado River (through the use of Colorado River water for groundwater recharge, irrigation, or water supplies that impact the groundwater basin through onsite wastewater disposal systems);
- Discharges from industrial or military sites that used, disposed of, or stored perchlorate; and
- Naturally occurring perchlorate (e.g., perchlorate in rainfall).

OCWD's ongoing monitoring program continues to assess the distribution of perchlorate in the groundwater basin and the change in concentration over time. OCWD will also continue to work with its groundwater producers in alleviating perchlorate concerns.

Emerging Contaminants

Pharmaceuticals, personal care products, and endocrine disruptors are considered emerging environmental contaminants. There are water quality concerns associated with these emerging contaminants because of their wide spread use among the population and their impact on human health because of exposure to low doses over long periods of time. OCWD is aware of these contaminants and is working with DPH to track and report their concentrations in the groundwater.

OCWD advocates the following general principles as water suppliers and regulators develop programs to protect public health and the environment from adverse effects of these emerging contaminants:

- Monitoring should focus on constituents that pose the greatest risk;

- Constituents that are prevalent, persistent in the environment, and may occur in unsafe concentrations should be prioritized;
- Analytical methods to detect these constituents should be approved by the state or federal government;
- Studies to evaluate the potential risk to human health and the environment should be funded by the state or federal government; and
- The state and federal government should encourage programs to educate the public on waste minimization and proper disposal of unused pharmaceuticals.

OCWD is committed to (1) track new compounds of concern; (2) research chemical occurrence and treatment; (3) communicate closely with CDPH on prioritizing investigation and guidance; (4) coordinate with OCSD, upper watershed wastewater dischargers, and regulatory agencies to identify sources and reduce contaminant releases; and (5) keep groundwater producing agencies such as Huntington Beach well informed on emerging issues**.**

Colored Groundwater

Colored water is found in deep aquifers (600-2000 feet) over a broad region of Orange County. Natural organic material from ancient redwood forests and peat bogs gives the water an amber tint and a sulfur odor. Although colored water is of very high quality, negative aesthetic qualities, its color and odor, require treatment before use as drinking water.

The total amount of colored groundwater is estimated to be over one million acre feet, perhaps as much as several million acre feet. Economic constraints pose challenges to developing colored water supplies as the water needs to be treated to remove the color and odor. Costs depend on the water quality (color and other parameters) and the type and extent of required treatment.

An additional factor that must be considered is the impact of water levels in the clear zone compared to water levels in the deeper aquifers with colored water. Monitoring wells reveal a correlation of clear/colored zone water level fluctuations, indicating a fairly strong hydrologic connection between the two zones in some areas of the basin. Three facilities currently treat colored groundwater in Orange County. Mesa Consolidated Water District (MCWD) has operated an ozone oxidation treatment facility since 1985 at its Well No. 4 site. In 2001, MCWD opened its Colored Water Treatment Facility (CWTF) using ozone treatment to produce 4,000 gallons per minute. The third facility is the Deep Aquifer Treatment System (DATS), a treatment facility using nano-filtration membranes operated by IRWD since 2002. This facility purifies 7.4 mgd of colored water.

The City's Well No. 8 falls within one of the County's colored water zones. As a result, this well has been out of production for several years. However, the City is currently pursuing a project to use Well No. 8 colored water and urban water runoff water for irrigation of various parks along Goldenwest Street.

Groundwater Quality Protection Policy

In recognition of the serious threat posed by groundwater contamination, OCWD adopted the Groundwater Quality Protection Policy in May 1987. The objectives of the policy are to:

- Maintain groundwater quality suitable for all existing and potential beneficial uses;
- Prevent degradation of groundwater quality;
- Assist regulatory agencies in identifying the sources of contamination to assure cleanup by the responsible parties;
- Maintain or increase the basin's usable storage capacity; and
- Inform the general public, regulatory agencies and Producers of the condition of the groundwater basin and of water quality problems as they are discovered.

The following eight specific programs were established to achieve these objectives:

1. Water quality monitoring of surface and groundwater;
2. Identification, interim containment, and cleanup of contamination;
3. Coordinated operation with regulatory agencies;
4. Control of toxic residuals;
5. Hazardous waste management planning;
6. Dissemination of technical information;
7. Public disclosure; and
8. Groundwater protection evaluation.

A key component of the policy describes circumstances under which OCWD will undertake contamination cleanup activities at District expense. This becomes necessary when contamination poses a significant threat and the party responsible for the contamination cannot be identified, is unable to clean up the contamination, or is unwilling to clean up the contamination. When appropriate to protect water quality in the basin, OCWD can also provide financial incentives for Producers to pump and treat groundwater that does not meet drinking water quality standards.

Groundwater Quality Improvement Projects

In addition to the Groundwater Quality Protection Policy, OCWD has also undertaken a number of specific projects aimed at improving water quality in the basin. Information on these projects has been extracted from OCWD's July 2009 Groundwater Management Plan Update and MWDOC's 2010 RUWMP and is presented below.

1. **North Basin Groundwater Protection Project (NBGPP) –** The NBGPP protects drinking water supplies and the beneficial use of groundwater. This project consists of five wells, which have been constructed to specifically remove and contain contaminated groundwater in the shallow aquifer. Additional extraction wells may be needed. OCWD will also construct pipelines to bring the contaminated groundwater to a centralized treatment plant where the contaminants will be removed. The purified water will then be re-injected back into the shallow aquifer. OCWD has initiated legal action against the parties responsible for contamination to seek cost recovery so that the public does not have to pay for this project.
2. **South Basin Groundwater Protection Project (SBGPP) –** The SBGPP is similar in nature to the NBGPP, but protects drinking water supplies in the south part of the Orange County groundwater basin. OCWD constructed six tri-nested monitoring wells to investigate the extent of VOC-contaminated groundwater in the Shallow Aquifer. Delineation of the contaminated groundwater will likely involve more than one phase of investigation. If "hot spots" or contaminated plumes are identified, the SBGPP may include comprehensive remediation systems to contain and remove the contamination similar to the NBGPP or localized interim remedial measures.
3. **MTBE Remediation** – In 2003, OCWD filed suit against numerous oil and petroleum-related companies that produce, refine, distribute, market, and sell MTBE and other oxygenates. The suit seeks funding from these responsible parties to pay for the investigation, monitoring, and removal of oxygenates from the basin. Treatment technologies used to remove MTBE from groundwater include granular activated carbon (GAC) or advanced oxidation. Depending upon site-specific requirements, a treatment train of two or more technologies in series may be appropriate.
4. **Irvine Desalter** – The Irvine Desalter was built in response to the 1985 discovery of VOCs beneath the former El Toro MCAS and the central area of Irvine. The plume of improperly disposed cleaning solvents migrated off base and threatened the main basin. IRWD and OCWD cooperated in building production wells, pipelines, and two treatment plants, both of which are now owned and managed by IRWD. One plant removes VOCs by airstripping and vapor-phase carbon adsorption with the treated water used for irrigation and recycled water purposes. A second plant treats groundwater outside the plume to remove excess nitrate and TDS concentrations using RO membranes for drinking water purposes. Combined production of the Irvine Desalter wells is approximately 8,000 AFY.

5. **Tustin Desalters** – Tustin's Main Street Treatment Plant has operated since 1989 to reduce nitrate levels from the groundwater produced by Tustin's Main Street Wells Nos. 3 and 4. The untreated groundwater can undergo either RO or ion exchange treatment. The RO membranes and ion exchange unit operate in a parallel treatment train. Approximately 1 mgd is bypassed and blended with the treatment plant product water to produce up to 2 mgd or 2,000 AFY. During fiscal year 2007-08, 55,700 pounds of nitrate were removed at this treatment plant.

   The Tustin Seventeenth Street Desalter began operation in 1996 to reduce high nitrate and TDS concentrations from the groundwater pumped by Tustin's Seventeenth Street Wells Nos. 2 and 4 and Tustin's Newport well. The desalter utilizes two RO membrane trains to treat the groundwater. The treatment capacity of each RO train is 1 mgd. Approximately 1 mgd is bypassed and blended with the RO product water to produce up to 3 mgd or approximately 3,000 AFY. During fiscal year 2007-08, 154,800 pounds of nitrate were removed at this treatment facility.

6. **Garden Grove Nitrate Removal** – The Garden Grove Nitrate Removal Project was a blending project utilizing two wells to meet the MCL for nitrate. Garden Grove Well No. 28, containing high nitrate concentrations, was blended with water from Well No. 23. The blending project operated from 1990 to 2005, when it was shut down. The City of Garden Grove is currently retrofitting Well 28 with a variable frequency drive and intends to reinstate the blending operation in 2012.

7. **River View Golf Course** – VOC contamination, originating from an upgradient source, was discovered in a well owned by River View Golf Course, located in the City of Santa Ana. The well was used for drinking water but was converted into a supply for golf course irrigation due to the contamination. Continued operation of the well helps to remove VOC contamination from the basin.

8. **Colored Water Treatment** – Mesa Consolidated Water District had been operating an ozone oxidation treatment plant to remove the color from groundwater pumped from Well No. 6 and Well No. 11. Due to an increase in color and bromide in the source water, Mesa has embarked on a project to replace the ozone and biological filtration treatment with nanofiltration membrane treatment and increase the capacity from 5.8 MGD to 8.6 MGD. Design and construction of this replacement and expansion project began in September 2009 and is anticipated to be completed in April of 2012.

   IRWD's Deep Aquifer Treatment System (DATS) removes color from deep aquifer groundwater. A total of 8 mgd of colored groundwater is pumped from two wells (IRWD C8 and C9) to the DATS plant. Nanofiltration (NF) membranes remove color and organics. Three NF trains each produce 2.44 mgd at a recovery rate of 92 percent. The high quality NF product water is degasified, disinfected, and pumped into the Dyer Road Wellfield pipeline for potable use resulting in 7.4 mgd added to the drinking water system. The highly colored NF concentrate is sent to disposal by OCSD.

The colored water treatment projects operated by MCWD and IRWD provide benefit beyond the production of water supply. The aquifers with colored water are generally deeper than the primary clear water production zones, and upward vertical migration of the colored water into the clear water aquifers has been observed. Upward migration can impair water quality in the clear water zones. A large groundwater level difference between the colored water aquifer and clear water aquifers exacerbates this situation. By pumping from the colored water aquifer, the MCWD and IRWD projects reduce the groundwater level in the colored water aquifer, thus reducing the vertical migration of colored water into the clear water aquifers.

3.2 WATER QUALITY EFFECT ON WATER MANAGEMENT STRATEGIES AND SUPPLY RELIABILITY

The previous section summarized the general water quality issues of Metropolitan's imported water and OCWD's groundwater supplies. The same water quality concerns apply to the City's water. Similar to Metropolitan and OCWD, the City prepared an assessment of the City's drinking water in December 2002. The groundwater sources were found to be most vulnerable to possible contamination from dry cleaners, electrical/electronic manufacturing, gas stations, known contaminant plumes, metal plating/finishing/fabricating, military installations, and plastics/synthetic producers.[32] The City continues to monitor its groundwater wells for the first indication of problems as part of their water management strategy.

The City has not experienced any significant water quality problems in recent years and does not anticipate any significant changes in its available water supply due to water quality issues in the future due in large part to the mitigation actions undertaken by Metropolitan and OCWD as described earlier.

[32] City of Huntington Beach, 2009 Water Quality Report.

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4 WATER RELIABILITY PLANNING

4.1 RELIABILITY OF WATER SUPPLIES

This section provides a description of the efforts of Metropolitan, MWDOC, OCWD and the City of Huntington Beach in securing an adequate and reliable regional water supply. This section also includes further discussion of these agencies and their roles in water supply reliability, and the near and long-term efforts they are involved with to ensure future reliability of water supplies to the City and the region as a whole.

The Southern California region faces a challenge in satisfying demands and securing firm water supplies. Increased environmental regulations and the competition for water from outside the region have resulted in reduced supplies of imported water. Continued population and economic growth generally leads to increased regional water demands, which results in larger demands on local supplies.

Reliability is a measure of a water system's expected success in managing water shortages. Good reliability planning requires accurate answers to the following questions:

1. What are the expected frequency and severity of shortages?
2. How will additional water management measures likely affect the frequency and severity of shortages?
3. How will available contingency measures reduce the impact of shortages when they occur?

The reliability of the City's water supply is currently dependent on the reliability of both the groundwater managed by OCWD and the imported water supplies managed by Metropolitan and delivered by the Municipal Water District of Orange County (MWDOC). Despite the ongoing regional water supply challenges, the goals and statutory mission of these agencies are to identify and develop projects to meet regional water demands.

State funding has been made available, through California voters' approval, to increase reliability of state water supplies. In March 2000, California voters approved Proposition 13, which authorized the State to issue $1.97 billion of its general obligation bonds for water projects. Additionally, California voters approved Proposition 50 in November 2002 and Proposition 84 in November 2006, which authorized the issuance by the State of $3.4 billion and $5.4 billion, respectively, of general obligation bonds for water projects. Types of water projects eligible for funding under Propositions 13, 50, and 84 include water conservation, groundwater storage, water treatment, water quality, water security and Colorado River water management projects.

4.1.1 Regional Agencies and Water Reliability

Metropolitan Water District of Southern California (Metropolitan)

Metropolitan was formed in the late 1920's with the primary goal of providing reliable water supplies to meet the water needs of its service area at the lowest possible cost. Collectively, charter members recognized the limited water supplies available within the region, and realized that continued prosperity and economic development of Southern California depended upon the acquisition and careful management of an adequate supplemental water supply. This foresight made the continued development of Southern California possible.

Metropolitan acquires water from Northern California via the State Water Project (SWP) and from the Colorado River via the Colorado River Aqueduct (CRA) to supply water to most of Southern California. As a wholesaler, Metropolitan has no retail customers, and distributes treated and untreated water directly to its 26 member agencies. One such member agency is the Municipal Water District of Orange County, of which the City of Huntington Beach is a member agency.

Through a series of Integrated Resources Plans initiated in 1996 and most recently updated in 2010, Metropolitan has worked toward identifying and developing water supplies to provide 100 percent reliability. Due to competing needs and uses for all of the water sources and regional water operational issues, Metropolitan undertook a number of planning processes: the Integrated Resources Planning (IRP) Process, the Water Surplus and Drought Management (WSDM) Plan, the Strategic Planning Process, the Report on Metropolitan Water Supplies: A Blueprint for Water Reliability, and most recently, the October 2010 IRP update and the November 2010 Regional Urban Water Management Plan. Combined, these documents provide a framework and guidelines for optimum future water planning.

The reliability and operational issues related to Metropolitan's various sources of supply are discussed in detail by major source in the subsequent subsections of this Urban Water Management Plan. Metropolitan provides imported water supplies to the City through the City's Metropolitan member agency, MWDOC. Metropolitan is the wholesale water agency that serves supplemental imported water from northern California through the State Water Project (SWP) and the Colorado River to 26 member agencies located in portions of Los Angeles, Orange, Riverside, San Bernardino, San Diego, and Ventura Counties, of which MWDOC is one.

The construction of the SWP was authorized by the State Legislature in 1951. Eight years later, the Legislature passed the Burns-Porter Act, which provided a mechanism for bonds to be issued to pay for the construction of certain portions of the SWP facilities. The California Department of Water Resources (DWR) has entered into contracts with water districts and regional agencies (SWP Contractors) specifying the amount of SWP water to be delivered to each SWP Contractor. Each SWP Contractor was provided with a contract amount and capacity rights to the SWP aqueduct and storage system in return

for payments intended to cover operation and maintenance, bondholder obligations, and repayment of moneys loaned from the California Water Fund. DWR water supply contracts contemplate SWP eventual delivery of 4.2 million AFY to 29 SWP Contractors. Although the SWP is not fully constructed and cannot yet deliver the full 4.2 million AFY in all years, the SWP has fully met SWP Contractors' water needs twelve out of the 17 years following the end of a six year drought in 1992. The dry years include 1994, 2001, and 2007 through 2009. Of SWP water deliveries, about 70 percent is delivered to SWP urban contractors and about 30 percent is delivered to SWP agricultural contractors. Kern County Water Agency and Metropolitan are the largest Contractors with DWR for SWP water.[33]

From a statewide perspective, the maximum capacity of the overall SWP transportation system is generally limited by the capacity of the system pumps. The capacity of the California Aqueduct is 10,300 cubic feet per second (cfs) at its northern end, and 4,480 cfs below the Edmonston pumping plant (1,000 cfs equates to approximately 82.6 acre-feet per hour, 1,983 acre-feet per day and 724,000 AFY). If these transportation rates were maintained for a full year, they would result in the transport of approximately 7.2 million acre-feet near the Delta and 3.2 million acre-feet to users in Southern California.[34]

Demand can have a significant effect upon the reliability of a water system. For example, if the demand occurs only three months in the summer, a water system with a sufficient annual supply but insufficient water storage may not be able to reliably meet the demand. If, however, the same amount of demand is distributed over the year, the system could more easily meet the demand because the need for water storage is reduced. Because the City of Huntington Beach overlies the Orange County Groundwater Basin and can utilize the Basin to smooth out seasonal peaks, its imported water reliability is enhanced.

Metropolitan's SWP imported water is stored at Castaic Lake on the western side of their service area and at Silverwood Lake near San Bernardino. Metropolitan water imported from the Colorado River via the CRA is stored at Diamond Valley Lake and Lake Mathews in Riverside County.

Metropolitan member agencies receive imported water at various delivery points along their system, and pay for it at tiered and/or uniform rates established by the Board, depending on the class of service. Metropolitan has recently increased its ability to supply water, particularly in dry years, through implementation of storage and transfer programs. Metropolitan's 26 member agencies deliver to their customers a combination of groundwater, local surface water, recycled water and imported water purchased from Metropolitan. For some member agencies, Metropolitan supplies all the water used within their service area, while others obtain varying amounts of water from Metropolitan

[33] See, generally DWR Bulletin No. 132-06 and latter supplements to Bulletin No. 13; report available at this link: http://www.water.ca.gov/swpao/bulletin.cfm .

[34] DWR, Bulletin No. 132-05, December 2006; report available at this link: http://www.water.ca.gov/swpao/bulletin.cfm

to supplement local supplies. Metropolitan has provided between 45 and 60 percent of the municipal, industrial and agricultural water used in its service area.[35]

Historical water demands in the Metropolitan service area increased from 3.14 million acre feet (MAF) in 1980 to 3.93 MAF in 1990. Total retail water demand is projected to grow from its current 4.03 MAF in 2010 to a projected 4.27 MAF in 2035.[36] For the Orange County service area, according to Metropolitan, demands are projected to increase approximately 2.1 percent between 2010 and 2035.[37] Table 4.1-1 shows the historic and projected total retail water demands for Metropolitan's Orange County service area. The water demand forecasts account for water savings resulting from plumbing codes, price effects, and actual and projected implementation of water conservation Best Management Practices as mandated by Senate Bill x7-7.[38]

Table 4.1-1
Total Retail Water Demand in Metropolitan's Service Area for Orange County (Includes Municipal and Industrial, and Agriculture in AF)

Actual			Interpolated	Projected				
1995	2000	2005	2010	2015	2020	2025	2030	2035
577,000	660,000	629,000	624,000	651,000	634,000	635,000	637,000	637,000

Source: November 2010 Regional Urban Water Management Plan for the Metropolitan Water District of Southern California, Table A.1-5

Colorado River Aqueduct (CRA)

The Colorado River was Metropolitan's original source of water after the agency's establishment in 1928. Metropolitan has a legal entitlement to receive water from the Colorado River under a permanent service contract with the U.S. Secretary of the Interior. Water from the Colorado River or its tributaries is also available to other users in California, as well as to users in the states of Arizona, Colorado, Nevada, New Mexico, Utah, and Wyoming (the "Colorado River Basin States"), resulting in both competition and the need for cooperation among these holders of Colorado River entitlements. In addition, under a 1944 treaty, Mexico has an allotment of 1.5 million acre-feet of Colorado River water annually, except in the event of extraordinary drought or serious accident to the delivery system in the United States, when the water allotted to Mexico can be curtailed. Mexico can also schedule delivery of an additional 200,000 acre-feet of Colorado River water per year if water is available in excess of the requirements in the United States and the 1.5 million acre-feet allotted to Mexico.

[35] Metropolitan Water District of Southern California, Urban Water Management Plan, November 2010, page 1-6; Plan can be accessed at this link: http://www.mwdh2o.com/mwdh2o/pages/yourwater/RUWMP/RUWMP_2010.pdf
[36] Ibid., Table A.1-5
[37] Ibid., Table A.1-5
[38] Ibid., Table A.1-5

The Colorado River Aqueduct, which is owned and operated by Metropolitan, transports water from the Colorado River approximately 242 miles to its terminus at Lake Mathews in Riverside County. After deducting for conveyance losses and considering maintenance requirements, up to 1.2 million acre-feet of water a year may be conveyed through the CRA to Metropolitan's member agencies, subject to availability of Colorado River water for delivery to Metropolitan as described below.

California is apportioned the use of 4.4 million acre-feet of water from the Colorado River each year plus one-half of any surplus that may be available for use collectively in Arizona, California and Nevada. In addition, California has historically been allowed to use Colorado River water apportioned to, but not used by, Arizona and Nevada when such supplies have been requested for use in California. Under the 1931 priority system that has formed the basis for the distribution of Colorado River water made available to California, Metropolitan holds the fourth priority right to 550,000 acre-feet per year. This is the last priority within California's basic apportionment of 4.4 million acre-feet. In addition, Metropolitan holds the fifth priority right to 662,000 acre-feet of water, which is in excess of California's basic apportionment.

Until 2002, Metropolitan had been able to take full advantage of its fifth priority right as a result of the availability of surplus water and apportioned but unused water. However, Arizona and Nevada increased their use of water from the Colorado River, leaving no unused apportionment available for California since the late 1990s. In addition, a severe drought in the Colorado River Basin has reduced storage in system reservoirs, resulting in no surplus water being available since 2002. Prior to 2002, Metropolitan could divert over 1.2 million acre-feet in any year, but since that time, Metropolitan's deliveries of Colorado River water varied from a low of 535,000 acre-feet in 2006 to a projected high of 1,150,000 acre-feet in 2010[39].

Metropolitan has taken steps to augment its share of Colorado River water through agreements with other agencies that have rights to use such water. Under a 1988 water conservation agreement (the "1988 Conservation Agreement") between Metropolitan and the Imperial Irrigation District (IID), IID has constructed and is operating a number of conservation projects that are currently conserving 105,000 acre-feet of water per year. In 2007, the conserved water augmented the amount of water available to Metropolitan by 85,000 acre-feet and, by prior agreement, to the Coachella Valley Water District (CVWD) by 20,000 acre-feet.[40]

In 1992, Metropolitan entered into an agreement with the Central Arizona Water Conservation District (CAWCD) to demonstrate the feasibility of CAWCD storing Colorado River water in central Arizona for the benefit of an entity outside of the State of Arizona. Pursuant to this agreement, CAWCD created 80,909 acre-feet of long-term storage credits that may be recovered by CAWCD for Metropolitan. Metropolitan, the Arizona Water Banking Authority, and CAWCD executed an amended agreement for

[39] Ibid., Table A.2-1
[40] Ibid, Page A.3-4

recovery of these storage credits in December 2007. In 2007, 16,804 acre-feet were recovered. Metropolitan requested 25,000 acre-feet be recovered in 2008, and expects to request the balance of the storage credits over the next several years. Water recovered by CAWCD under the terms of the 1992 agreement allows CAWCD to reduce its use of Colorado River water, resulting in Arizona having an unused apportionment. The Secretary of the Interior is making this unused apportionment available to Metropolitan under its Colorado River water delivery contract.

In April 2008, Metropolitan's Board authorized the expenditure of $28.7 million to join the CAWCD and the Southern Nevada Water Authority (SNWA) in funding the construction of a new 8,000 acre-foot off-stream regulating reservoir near Drop 2 of the All-American Canal in Imperial County. The Drop 2 Reservoir is expected to save up to 70,000 acre-feet of water per year by capturing and storing water that would otherwise be lost. In return for its funding, Metropolitan received 100,000 acre-feet of water that is stored in Lake Mead until recovered, with annual delivery of up to 34,000 acre-feet of water through 2010 and up to 25,000 acre-feet between 2011 and 2036. Besides the additional water supply, the new reservoir will add to the flexibility of Colorado River operations.

Metropolitan and the Palo Verde Irrigation District (PVID) signed the program agreement for a Land Management, Crop Rotation and Water Supply Program in August 2004. This program provides up to 118,000 acre-feet of water available to Metropolitan in certain years. The term of the program is 35 years. Fallowing of approximately 20,000 acres of land began on January 1, 2005. In 2005, 2006, 2007, 2008 and 2009 approximately 108,700, 105,500, 72,300, 94,300 and 102,200 acre-feet, respectively, of water were saved through these programs.[41]

With Arizona's and Nevada's increasing use of their respective apportionments and the uncertainty of continued Colorado River surpluses, in 1997 the Colorado River Board of California, in consultation with Metropolitan, IID, PVID, CVWD, the Los Angeles Department of Water and Power and the San Diego County Water Authority (SDCWA), embarked on the development of a plan for reducing California's use of Colorado River water to its basic apportionment of 4.4 million acre-feet when use of that basic allotment is necessary (California Plan). In 1999, IID, CVWD, Metropolitan and the State of California agreed to a set of Key Terms aimed at managing California's Colorado River supply. These Key Terms were incorporated into the Colorado River Board's May 2000 California Plan that proposed to optimize the use of the available Colorado River supply through water conservation, transfers from higher priority agricultural users to Metropolitan's service area and storage programs.

To implement these plans, a number of agreements have been executed. One such agreement, the Quantification Settlement Agreement (QSA), is a landmark agreement signed by the four California Colorado River water use agencies and the U.S. Secretary of the Interior, which will guide reasonable and fair use of the Colorado River by

[41] Ibid, page A.3-7

California through the year 2037. The QSA was authorized in October 2003 and defined Colorado River water deliveries to the four California agencies as well as facilitated transfers from agricultural agencies to urban users. The QSA is a critical component of California's Colorado River Water Use Plan.

State Water Project (SWP)

The SWP is owned and operated by the California Department of Water Resources. The reliability of the SWP impacts Metropolitan's member agencies' ability to plan for future growth and supply. On an annual basis, each of the 29 SWP contractors, including Metropolitan, request an amount of SWP water based on their anticipated yearly demand. In most cases, Metropolitan's requested supply is equivalent to its full Table A Amount,[42] currently at 1,911,500 AFY, and in certain wetter years additional supply may be made available. The full Table A amount is defined as the maximum amount of imported water to be delivered and is specified in the contract between the DWR and the contractor. After receiving the requests, DWR assesses the amount of water supply available based on precipitation, snow pack on northern California watersheds, volume of water in storage, projected carry over storage, and Sacramento-San Joaquin Bay Delta regulatory requirements. Due to the uncertainty in water supply, contractors are not typically guaranteed their full Table A Amount, but instead, are allocated a percentage of that amount based on the available supply. Table 4-1-2 lists the historical SWP deliveries to Metropolitan and the delivery's percentage compared to the full Table A amount. Once the percentage is set early in the water year, the agency can count on that amount of supply or more in the coming year. The percentage is typically set conservatively and is then held or adjusted upwards later in the year based on a reassessment of precipitation and snow pack.

Litigation filed by several environmental interest groups (NRDC v. Kempthorne (Case No. 05CV01207-OWW-GSA); Pacific Coast Federation of Fishermen's Associations v. Gutierrez (Case No. 06CV00245-OWW)) has alleged that certain biological opinions and incidental take permits granted by state and federal agencies for water permits in the Sacramento-San Joaquin Bay Delta inadequately analyzed impacts on species listed as endangered under the Federal Endangered Species Act (ESA). In 2007, Federal District Judge Wanger issued a decision, finding the United States Fish and Wildlife Service's biological opinion for Delta smelt to be invalid. Judge Wanger issued an Interim Remedial Order and Findings of Fact and Conclusions of Law requiring that the SWP and Central Valley Project (CVP) operate according to certain specified criteria until a

[42] Two types of deliveries are assumed for the SWP contractors: Table A and Article 21. Table A Amount is the contractual amount of allocated SWP supply, set by percentage amount annually by DWR; it is scheduled and uninterruptible. Article 21 water refers to the SWP contract provision defining this supply as water that may be made available by DWR when excess flows area available in the Delta (i.e., Delta outflow requirements have been met, SWP storage south of the Delta is full, and conveyance capacity is available beyond that being used for SWP operations and delivery of allocated and scheduled Table A supplies). Article 21 water is made available on an unscheduled and interruptible basis and is typically available only in average to wet years, generally only for a limited time in the later winter.

new biological opinion for the Delta smelt was issued by the United States Fish and Wildlife Service.

Table 4.1-2
SWP Deliveries to Metropolitan (AF)[43]

Year	SWP Delivery	% of Full Table A
1981	826,951	43%
1982	856,996	45%
1983	385,308	20%
1984	501,682	26%
1985	740,410	39%
1986	756,142	40%
1987	769,603	40%
1988	957,276	50%
1989	1,215,139	64%
1990	1,457,676	76%
1991	624,861	33%
1992	746,991	39%
1993	663,390	35%
1994	845,305	44%
1995	451,305	24%
1996	642,871	34%
1997	724,393	38%
1998	521,255	27%
1999	790,538	41%
2000	1,442,615	75%
2001	1,119,408	59%
2002	1,413,745	74%
2003	1,560,569	82%
2004	1,792,246	94%
2005	1,720,350	90%
2006	1,911,500	100%
2007	1,146,900	60%
2008	669,025	35%
2009	764,600	40%
2010	955,750	50%
2011	1,529,200	80%

[43] Table A data extracted from DWR Website; 2011 data represents the initial allocation of 25% plus the subsequent notices to SWP Contractors in December 2010, January, and April, 2011increasing the allocation to 50%, 60% and 80%, respectively. MWD's full Table A amount is 1,911,500 AFY

DWR bi-annually prepares a report on the current and future for SWP water supply conditions, if no significant improvements are made to convey water past the Sacramento-San Joaquin Delta (Delta) or to store the more variable run-off expected with climate change. The latest 2009 State Water Project Delivery Reliability Report (2009 Report) is the most current of these reports dated August 2010.

The 2009 Report shows a continuing erosion of the ability of the SWP to deliver water. For current conditions, the dominant factor for these reductions is the restrictive operational requirements contained in the federal biological opinions. For future conditions, it is these requirements and the forecasted effects of climate change.

Deliveries estimated for the 2009 Report are reduced by the operational restrictions of the biological opinions issued by the U.S. Fish and Wildlife Service in December 2008 and the National Marine Fisheries Service in June 2009 governing the SWP and CVP operations. To illustrate the effect of these operational restrictions, the median value estimated for the primary component of SWP Table A deliveries for Current Conditions in the 2005 Report is 3,170 thousand acre feet (TAF); in the 2007 Report is 2,980 TAF; and in the 2009 Report is 2,680 TAF; for a reduction of almost 500 TAF. For the 2009 studies, the changes in run-off patterns and amounts are included along with a potential rise in sea level. Sea level rise has the potential to require more water to be released to repel salinity from entering the Delta in order to meet water quality objectives established for the Delta. The effect of the operational restrictions in addition to the incorporation of potential climate change impacts amounts to an estimated reduction of 970 TAF when the median value for annual SWP deliveries for Future Conditions in the 2005 Report (3,750 TAF) is compared to the updated value in the 2009 Report (2,600 TAF). DWR has altered operations of the SWP to accommodate species of fish listed under the Federal and California Endangered Species Acts (ESAs). These changes in project operations have influenced the manner in which water is diverted from the Bay-Delta and SWP deliveries to the southern part of the State. Restrictions on Bay-Delta pumping beginning in 2008 under the Interim Remedial Order in NRDC v. Kempthorne have resulted in reduced deliveries of SWP water to Metropolitan.

Based on DWR estimates of SWP deliveries under the Interim Remedial Order, and assuming an equal division of curtailments between the SWP and CVP,[44] Metropolitan has met firm demands in calendar years 2008, 2009 and 2010. However, Metropolitan has been withdrawing supplies from surface and groundwater storage to meet current demands. Anticipating that storage could be significantly reduced by the end of 2010, Metropolitan and its member agencies are calling for voluntary water conservation to lower demands and reduce drawdown from water storage. In fact on April 14, 2009, Metropolitan adopted a Level 2 Allocation, which equates to a 10 percent reduction in

[44] Assuming an equal division of curtailments between the SWP and the CVP is conservative and may have the effect of overstating the amount of SWP curtailment. As an example, in January 2009, the U.S. Bureau of Reclamation, which operates the CVP, provided notice to agricultural customers that it intended to not provide any water deliveries to agricultural customers in 2009. Thus, in the short term it appears as though agricultural users which receive water through the CVP may suffer deeper water cuts as compared to water purveyors which receive water from the SWP.

regional water supplies. Based on similar water supply conditions, this same level of allocation was adopted on April 13, 2010 for this current fiscal year by Metropolitan. If necessary, mandatory water allocations could be imposed in the future to cause further reductions in water use and reduce drawdown from water storage reserves. Metropolitan's member agencies and retail water suppliers in Metropolitan's service area also have the ability to implement water conservation and allocation programs, and many of the retail suppliers in Metropolitan's service area have initiated conservation measures.

To create a systemic solution to the issues facing the Delta (which have existed since the 1970's), Governor Schwarzenegger created the Delta Vision process, which is aimed at identifying long-term solutions to the conflicts in the Bay-Delta, including natural resource, infrastructure, land use and governance issues. The Delta Vision Blue Ribbon Task Force presented findings and recommendations for a sustainable Delta as a healthy ecosystem and water supply source on January 17, 2008. In addition, state and federal resource agencies and various environmental and water user entities are currently engaged in the development of the Bay-Delta Conservation Plan, which is aimed at addressing ecosystem needs and securing long-term operating permits for the SWP. The Bay-Delta Conservation Plan process is scheduled for completion during the third quarter of 2009, with acquisition of appropriate permits and completion of the associated environmental impact statement/impact report. Recently, statewide officials have expressed support for the construction of the peripheral canal, which would alleviate some of the delta species considerations by transferring river water south before it reaches the Bay Delta.

The issues, such as the recent decline of some fish species in the Delta and surrounding regions and certain operational actions in the Delta, may impact Metropolitan's water supply from the Delta. SWP operational requirements may be further modified through the consultation process for new biological opinions for listed species under the Federal ESA or from the California Department of Fish and Game's actions regarding the California ESA. Decisions in current or future litigation, listings of additional species (such as the longfin smelt), or new regulatory requirements could adversely affect SWP operations in the future by requiring additional export reductions, releases of additional water from storage, or other operational changes impacting water supply operations.

Water Transfer and Exchange Programs

California's agricultural activities consume approximately 34 million acre-feet of water annually, which is 80 percent of the total water used for agricultural and urban uses and 40 percent of the water used for all consumptive uses. Voluntary water transfers and exchanges can make a portion of this agricultural water supply available to support the State's urban areas. Such existing and potential water transfers and exchanges are an important element for improving the water supply reliability within Metropolitan's service area and accomplishing the reliability goal set by Metropolitan's Board of Directors. Metropolitan is currently pursuing voluntary water transfer and exchange programs with state, federal, public and private water districts and individuals. The

following information on these programs has been extracted from Metropolitan's 2010 Regional UWMP:

- *Semitropic Storage Program*: Metropolitan has a groundwater storage program with Semitropic Water Storage District located in the southern part of the San Joaquin Valley. The maximum storage capacity of the program is 350 TAF. The specific amount of water Metropolitan can store in and subsequently expect to receive from the programs depends upon hydrologic conditions, any regulatory requirements restricting Metropolitan's ability to export water for storage, and the demands placed on the Semitropic Program by other program participants. During the recent dry year of 2008, the storage program delivered 125 TAF to Metropolitan. During wet years, Metropolitan has the discretion to use the program to store portions of its SWP entitlement water that are in excess of the amounts needed to meet Metropolitan's service area demand. In Semitropic, the water is delivered to district farmers who use the water in-lieu of pumping groundwater. During dry years, the districts return Metropolitan's previously stored water to Metropolitan by direct groundwater pump-in return and the exchange of State Water Project entitlement water.
- *Arvin-Edison Storage Program*: Metropolitan amended the groundwater storage program with Arvin-Edison Water Storage District in 2008 to include the South Canal Improvement Project. The project increases the reliability of Arvin-Edison returning higher water quality to the California Aqueduct. The program storage capacity is 350 TAF. The specific amount of water Metropolitan can expect to store in and subsequently receive from the programs depends upon hydrologic conditions and any regulatory requirements restricting Metropolitan's ability to export water for storage. The storage program is estimated to deliver 75 TAF. During wet years, Metropolitan has the discretion to use the program to store portions of its SWP Table A supplies which are in excess of the amounts needed to meet Metropolitan's service area demand. The water can be either directly recharged into the groundwater basin or delivered to district farmers who use the water in-lieu of pumping groundwater. During dry years, the district returns Metropolitan's previously stored water to Metropolitan by direct groundwater pumping in return or by exchange of surface water supplies.
- *San Bernardino Valley MWD Storage Program*: The San Bernardino Valley MWD Storage program allows for the purchase of a portion of San Bernardino Valley Municipal Water District's State Water Project supply. The program includes a minimum purchase provision of 20 TAF and the option of purchasing additional supplies when available. This program can deliver between 20 TAF and 70 TAF in dry years, depending on hydrologic conditions. The expected delivery for a single dry year similar to 1977 is 70 TAF. The agreement with San Bernardino Valley MWD also allows Metropolitan to store up to 50 TAF of transfer water for use in dry years.
- *Kern-Delta Water District Storage Program*: This groundwater storage program has 250 TAF of storage capacity. When fully developed, it will be capable of

providing 50 TAF of dry-year supply. The water can be either directly recharged into the groundwater basin or delivered to district farmers who use the water in-lieu of pumping groundwater. During dry years, the district returns Metropolitan's previously stored water to Metropolitan by direct groundwater pumping in return or by exchange of surface water supplies.

- *Mojave Storage Program*: Currently operated as a demonstration program, the program will store SWP supply delivered in wet years for subsequent withdrawal during dry years. When fully developed, the program is expected to have a dry-year yield of 35 TAF depending on hydrologic conditions.
- *Central Valley Transfer Programs*: Metropolitan expects to secure Central Valley water transfer supplies via spot markets and option contracts to meet its service area demands when necessary. Hydrologic and market conditions, and regulatory measures governing Delta pumping plant operations will determine the amount of water transfer activity occurring in any year. Transfer market activity in 2003, 2005, 2008, and 2009 provide examples of how Metropolitan has secured water transfer supplies as a resource to fill anticipated supply shortfalls needed to meet Metropolitan's service area demands.
    - In 2003, Metropolitan secured options to purchase approximately 145 TAF of water from willing sellers in the Sacramento Valley during the irrigation season. These options protected against potential shortages of up to 650 TAF within Metropolitan's service area that might have arisen from a decrease in Colorado River supply or as a result of drier than expected hydrologic conditions. Using these options, Metropolitan purchased approximately 125 TAF of water for delivery to the California Aqueduct.
    - In 2005, Metropolitan, in partnership with seven other State Water Contractors, secured options to purchase approximately 130 TAF of water from willing sellers in the Sacramento Valley, of which Metropolitan's share was 113 TAF. Metropolitan also had the right to assume the options of the other State Water Contractors if they chose not to purchase the transfer water. Due to improved hydrologic conditions, Metropolitan and the other State Water Contractors did not exercise these options.
    - In 2008, Metropolitan in partnership with seven other State Water Contractors, secured approximately 40 TAF of water from willing sellers in the Sacramento Valley, of which Metropolitan's share was approximately 27 TAF.
    - In 2009, Metropolitan in partnership with eight other buyers and 21 sellers participated in a statewide Drought Water Bank, which secured approximately 74 TAF, of which Metropolitan's share was approximately 37 TAF.

Metropolitan's recent water transfer activities have demonstrated its ability to develop and negotiate water transfer agreements either working directly with the agricultural districts who are selling the water or through a statewide Drought Water Bank. Because of the complexity of cross-Delta transfers and the need to

optimize the use of both CVP and SWP facilities, DWR and USBR are critical players in the water transfer process, especially when shortage conditions increase the general level of demand for transfers and amplify ecosystem and water quality issues associated with through-Delta conveyance of water. Therefore, Metropolitan views state and federal cooperation to facilitate voluntary, market-based exchanges and sales of water as a critical component of its overall water transfer strategy.

In addition to the previously mentioned programs, Metropolitan also manages or participates in the following existing SWP programs located outside of its service area:

- *Sacramento Valley Water Management Agreement (Phase 8 Settlement)*: Metropolitan is a signatory to the Sacramento Valley Water Management Agreement (Phase 8 Settlement) that includes work plans to develop and manage water resources to meet Sacramento Valley in-basin needs, environmental needs under the SWRCB's Water Quality Control Plan, and export supply needs for both water demands and water quality. The agreement specifies about 60 water supply and system improvement projects by 16 different entities in the Sacramento Valley.
- *Monterey Amendment*: Metropolitan was a signatory to the 1994 Monterey Amendment to resolve disputes between the urban and agricultural SWP contractors over how contract supplies are to be allocated in times of shortage by amending certain provisions of the long-term water supply contracts with DWR. The Monterey Amendment altered the water allocation procedures such that both shortages and surpluses would be shared in the same manner for all contractors, eliminating the prior "agriculture first" shortage provision. In turn, the agricultural contractors agreed to permanently transfer 130,000 AF to urban contractors and permanently retire 45,000 AF of their contracted supply.
- *SWP Terminal Storage:* Metropolitan has contractual rights to 65,000 AF of flexible storage at Lake Perris (East Branch terminal reservoir) and 153,940 AF of flexible storage at Castaic Lake (West Branch terminal reservoir). This storage provides Metropolitan with additional options for managing SWP deliveries to maximize yield from the project.
- *Yuba Dry-year Water Purchase Program*: In December 2007, Metropolitan entered into an agreement with DWR providing for Metropolitan's participation in the Yuba Dry Year Water Purchase Program between Yuba County Water Agency and DWR through 2025.
- *Desert Water Agency/Coachella Valley Water District (DWCV) SWP Table A Transfer*: Under the transfer agreement, Metropolitan transferred 100,000 AF of its SWP Table A amount to DWCV effective January 1, 2005. DWCV pays all SWP charges for this water, including capital costs associated with capacity in the SWP to transport this water to Perris Reservoir as well as the associated variable costs. The amount of water actually delivered in any given year depends on that year's SWP allocation. Water is delivered through the existing exchange

agreements between Metropolitan and DWCV. While Metropolitan transferred 100,000 AF of its Table A amount, it retained other rights, including interruptible water service, its full carryover amounts in San Luis Reservoir, its full use of flexible storage in Castaic and Perris Reservoirs, and any rate-management credits associated with the 100,000 AF. In addition, Metropolitan is able to recall the SWP transfer water in years in which Metropolitan determines it needs the water to meet its water management goals. The main benefit of the agreement is to reduce Metropolitan's SWP fixed costs in wetter years when there are more than sufficient supplies to meet Metropolitan's water management goals, while at the same time preserving its dry-year SWP supply.

- *DWCV Advance Delivery Program*: Under this program, Metropolitan delivers Colorado River water to DWCV in advance of the exchange for their SWP Contract Table A allocations. By delivering enough water in advance to cover Metropolitan's exchange obligations, Metropolitan is able to receive DWCV's available SWP supplies in years in which Metropolitan's supplies are insufficient without having to deliver an equivalent amount of Colorado River water.
- *DWCV Other SWP Deliveries*: Since 2008, Metropolitan has provided DWCV's written consent to take delivery from the SWP facilities non-SWP supplies separately acquired by each agency. These deliveries include water acquired from the Yuba Dry Year Water Purchase Program and the 2009 Drought Water Bank.

Supply Management Strategies

On the regional level, Metropolitan has taken a number of actions to secure a reliable water source for its member agencies. Metropolitan recently adopted a water supply allocation plan for dealing with potential shortages that takes into consideration the impact on retail customers and the economy, changes and losses in local supplies, the investment in and development of local resources, and conservation achievements.[45] Additional actions taken by Metropolitan during the first half of 2008 include the adoption of a $1.9 billion spending plan, increased rates and charges,[46] and the funding of a new reservoir to benefit Colorado River supply capabilities.[47] Metropolitan's approved budget for 2010/11 included rate increases of 7.5 percent with another 7.5 percent increase planned for 2011/12 to maintain this spending for the improvement of water conveyance facilities, water transfers, and providing financial assistance to member agency's local conservation, recycling, and groundwater clean-up efforts[48].

[45] Metropolitan Water District Press Release dated February 12, 2008.
[46] Metropolitan Water District Board Meeting, March 11, 2008, and Press Release of same date, regarding spending plan and adoption of rates and charges.
[47] Metropolitan Water District Board Meeting, April 8, 2008, and Press Release of same date, regarding new reservoir.
[48] Metropolitan Water District, Annual Budget, which can be accessed at this link: http://www.mwdh2o.com/mwdh2o/pages/finance/budget/AB2011.pdf

Metropolitan also supports a number of resource management actions and measures, which promote consistency in the available water supply during dry years. These actions and measures, segregated below by category, include:

Conservation

- Providing incentives to facilitate the installation of water conserving devices. Metropolitan is also looking at refining their current incentive program to include more options, streamlined administrative processes, and more standardization across programs to increase participation. Total incentive payments for FY 2006/07 were $15.4 million and for FY 2007/08 were $18.1 million, which created 8,300 AF and 7,400 AF of new conserved water savings, respectively, bringing the total to 120,000 AF of conserved annual water savings, since 1991.
- Promoting water savings through legislative measures.
- Pursuing specific implementation strategies outlined in Metropolitan's Conservation Strategy Plan, jointly developed with its member agencies.

Local Resources (LRP)

- Providing incentives of up to $250 per acre-foot to expand water recycling and groundwater recovery programs. Eighty-six participating water recycling and groundwater recovery projects are expected to collectively produce about 363,000 AFY once fully implemented. Since inception of the LRP in 1982, Metropolitan has provided more than $244 million for the production of about 1.3 MAF of recycled water and recovered groundwater.
- Encouraging development of seawater desalination by promoting improved regional facilitation and funding. Additional information on desalination is included later in this section.
- Updating policies to allow for an open process to accept and view project applications on a continuous basis, with a goal of development of an additional 174,000 acre-feet per year of local water resources.

In-Basin Groundwater Storage

- Promoting dry-year conjunctive use programs with member and retail agencies, which provide more than 415,000 AF of additional storage within Metropolitan's service area with a contractual yield of more than 115,000 AF during dry conditions. Metropolitan has allocated $52.4 million to these programs to date. Metropolitan also has about 63,000 AF in local supplemental storage through agreements with several member agencies.

In-Basin Surface Water Storage

- Providing storage in Metropolitan's Diamond Valley, Lake Mathews and Lake Skinner Reservoirs.

- Providing flexible storage in DWR's Castaic Lake and Lake Perris Reservoirs.

Municipal Water District of Orange County (MWDOC)

MWDOC represents its members at a regional, state and federal level, and advocates for the development and protection of imported water supplies and planning along with coordinating the water needs for its service area. MWDOC's water management goals and objectives include working together with Orange County water agencies, including the City, to focus on solutions and priorities for improving Orange County's future water supply reliability.

MWDOC's engineering and planning staffs also represent its member agencies' interests in such water planning efforts as Metropolitan's IRP and Water Surplus and Drought Management (WSDM) Plan, the focus on Orange County's water future effort, and the Orange County Water Plan. Through these efforts, the goal is to improve water planning in Orange County to ensure a high degree of reliability and quality in future water supplies.

Efforts of MWDOC to maintain a reliable water supply include a commitment to the intensive and cost-effective development of Orange County's water resources. Development of local water supplies will lessen Orange County's dependence on imported water. Therefore, in order to maintain a more reliable water supply, a number of projects including storage, recycling, conjunctive use with groundwater basins, ocean desalination and new groundwater development will contribute to enhanced water reliability.

Programs and projects directly managed by MWDOC include exchanges and transfers, participation with the Best Management Practices (BMPs) as well as extensive conservation and educational programs available to its member agencies. These programs and projects support further water reliability for its member agencies and throughout Orange County.[49]

Orange County Water District (OCWD)

As previously noted, OCWD was formed by a special act of the California legislature in 1933 to manage, replenish, regulate, and protect the groundwater supplies underlying central Orange County. To accomplish these goals, the District's enabling act empowers it to (1) provide for the conjunctive use of groundwater and surface water; (2) store water in underground basins or reservoirs; (3) regulate and control the storage of water and the use of storage space in the groundwater basin; (4) purchase and import water into the District; (5) transport, reclaim, purify, treat, inject, extract, or otherwise manage and control water for the beneficial use of persons or property within the district; and (6) improve and protect the quality of groundwater supplies within the District.[50]

[49] MWDOC. Regional Urban Water Management Plan. 2010.
[50] OCWD Groundwater Management Plan Update, July 2009

The Orange County groundwater basin meets approximately 60 to 70 percent of the water supply demand within the District's boundaries shown in Figure 2.1-3. Nineteen major producers, including cities, water districts, and private water companies, pump water from the basin and retail it to the public.

Since its founding, the District has grown in size by about 40 percent to its current 229,000 acres. Concurrent with this geographic growth, there has also been a rapid growth in population. OCWD has met these challenges through innovative and creative solutions, which have yielded increased available groundwater supplies while protecting the long-term sustainability of the basin. Groundwater pumping from the basin has grown from approximately 150,000 acre-feet per year (AFY) in the mid-1950s to over 300,000 in recent years.

One of the District's primary efforts has been the control of seawater intrusion into the groundwater basin, especially in two areas: the Alamitos Gap and the Talbert Gap. OCWD began addressing the Alamitos Gap intrusion by entering a partnership in 1965 with the Los Angeles County Flood Control District to operate injection wells in the Alamitos Gap. Operation of the injection wells forms a hydraulic barrier to seawater intrusion.

To address seawater intrusion in the Talbert Gap, OCWD constructed Water Factory 21, a plant that treated secondary-treated water from the Orange County Sanitation District (OCSD) to produce purified water for injection. Water Factory 21 operated for approximately 30 years until it was taken off-line in 2004. It was replaced by an advanced water treatment system, the Groundwater Replenishment System (GWRS). The GWRS, the largest water purification project of its kind, began operating in 2008 to provide water for the Talbert Injection Barrier as well as to supply water to recharge/percolation basins in the City of Anaheim.

OCWD Long Term Facilities Plan

OCWD's June 2009 Long Term Facilities Plan (LTFP) evaluated potential projects for implementation over a 20-year planning horizon. The LTFP's goal is to enhance basin and water quality management activities through achievement of the following three management objectives: (1) Cost effectively protect and increase the basin's sustainable yield; (2) Protect and enhance groundwater quality; and (3) Increase operational efficiency.

The LTFP identifies 19 priority projects grouped into the six categories as noted below:[51]

- **Water Supply Facilities**
  1. GWRS Initial Expansion
  2. Enhanced Water Conservation at Prado Dam

[51] OCWD's LTFP may be accessed on their website at this link: http://www.ocwd.com/_coreModules/common/search.aspx?keywords=Long-Term

- **Recharge Facilities**
  3. De-silting Improvement Program
  4. Mid-Basin Injection Wells
  5. Santiago Creek Enhanced Recharge
  6. Subsurface Recharge
- **Basin Management Facilities**
  7. Alamitos Barrier Improvements\
- **Water Quality Management Facilities**
  8. South Basin Groundwater Protection Project
  9. North Basin Groundwater Protection Project
  10. MTBE Investigation and Remediation
- **Operational Improvements**
  11. Sediment Management in Prado Basin and Santa Ana River
  12. Recharge Basin Rehabilitation
  13. Burris & Lincoln Basins Reconfiguration
  14. Five Coves and Lincoln Basins Bypass Pipeline
  15. Santiago Basin Pump Station
  16. Placentia & Raymond Basins Improvements
  17. Santiago Basins Intertie
  18. Olive Basin Pump Station
- **Electrical Generation Facilities**
  19. Electrical Generation with Solar Plant

Orange County Sanitation District (OCSD)

Wastewater from the City's service area is collected and treated by OCSD. OCSD manages wastewater collection and treatment for approximately 479 square miles in central and northwest Orange County, which includes 21 cities, 3 special districts, and 2.5 million residents.[52] OCSD utilizes the following two facilities: Reclamation Plant No. 1 in Fountain Valley and Treatment Plant No. 2 in Huntington Beach to treat a combined daily average of 230 million gallons of wastewater. Effluent from Reclamation Plant No. 1 is either routed to the ocean disposal system or is sent to OCWD for advanced treatment and recycling.

[52] OCSD website, http://www.ocsd.com/about/general_information/about_us.asp

OCWD/OCSD Groundwater Replenishment System (GWRS)

The GWRS is a jointly funded project of OCWD and OCSD. GWRS takes highly treated wastewater that would have previously been discharged into the Pacific Ocean and purifies it using a three-step advanced treatment process consisting of microfiltration, reverse osmosis and ultraviolet light with hydrogen peroxide. The process produces high-quality water that exceeds all state and federal drinking water standards.[53]

As noted on OCWD's website, the GWRS plant has been operational since January 2008. This state-of-the-art water purification project can produce up to 72,000 AFY of high-quality water, which can meet the needs of nearly 600,000 residents in north and central Orange County. Plant expansion to 101,000 AF, enough to serve an additional 250,000 residents, is currently under design.

Regional Water Quality Control Board – Region 8

Background

The State Water Resources Control Board (SWRCB) and the nine Regional Water Quality Control Boards (Regional Boards) are responsible for the protection and, where possible, the enhancement of the quality of California's waters. The SWRCB sets statewide policy, and together with Regional Boards, implements state and federal laws and regulations. Each of the nine Regional Boards adopts a Water Quality Control Plan or Basin Plan, which recognizes and reflects regional differences in existing water quality, the beneficial uses of the region's ground and surface waters, and local water quality conditions and problems.[54]

In 1975, the Santa Ana Regional Water Quality Control Board (RWQCB) adopted the original Water Quality Control Plan (Basin Plan) for the Santa Ana River Basin. That plan was updated in 1995, to address issues that had evolved over time due to increasing populations and changing water demands in the region. The scope of the document covers the Santa Ana River Basin, which includes the upper and lower Santa Ana River watersheds including northwestern Orange County. The Basin Plan was updated again in 2008 to include all amendments adopted since the 1995 update. The 2008 update also included related formatting change, but did not include any other substantive changes.[55]

In 2006, a triennial review of the Basin Plan was performed. In December 2006, at a public hearing, the RWQCB adopted Resolution No. R8-2006-0085, approving the Triennial Review Priority List and Work Plan. The Final 2006 Basin Plan Triennial Review Priority List consists of 36 Basin Plan issues, and reflects consideration of

[53] Per OCWD's website, http://www.gwrsystem.com/about-gwrs.html
[54] Per the Santa Ana Region Basin Plan, http://www.swrcb.ca.gov/rwqcb8/water_issues/programs/basin_plan/docs/chapter1.pdf
[55] Per Santa Ana RWQCB website, http://www.swrcb.ca.gov/rwqcb8/water_issues/programs/basin_plan/docs/basin_plan_notes_february_2008_update.pdf

comments from stakeholders, USEPA, and staff. Staff conducted two stakeholder meetings, held on June 6, 2006 and September 13, 2006, to solicit public comments and recommendations for changes to the priority list. The list identifies issues, their proposed priority, and estimates of the resources necessary to address them.[56]

The Basin Plan is more than just a collection of water quality goals and policies, descriptions of conditions, and discussions of solutions. It is also the basis for the RWQCB's regulatory programs. The Basin Plan establishes water quality standards for all the ground and surface waters of the region. The RWQCB also regulates water discharges to minimize and control their effects on the quality of the region's ground and surface water. Permits are issued under a number of programs and authorities.

Water quality problems in the region are listed in the Basin Plan, along with the causes, where they are known. For water bodies with quality below the levels necessary to allow all the beneficial uses of the water to be met, plans for improving water quality are included. Legal basis and authority for the RWQCB reflects, incorporates, and implements applicable portions of a number of national and statewide water quality plans and policies, including the California Water Code (Porter-Cologne Water Quality Control Act) and the Clean Water Act.

Key Regional Issues

Water quality degradation due to high concentrations of nitrogen and total dissolved solids (TDS) is the most significant regional water quality problem in the Santa Ana River Watershed (Watershed). Historically, the Santa Ana River likely flowed during most of the year, recharging deep alluvial groundwater basins in the inland valley and the coastal plain. However, irrigation projects eventually led to the diversion of all surface flow in the river, and the quantity of groundwater recharge diminished greatly. Water quality concerns in the Watershed focus on elevated concentrations of TDS and total inorganic nitrogen (TIN).

On January 22, 2004, the Santa Ana Regional Water Quality Control Board adopted Resolution No. R8-2004-0001 to amend the Santa Ana River Basin Plan. The Amendment included revised boundaries for groundwater subbasins, now termed "groundwater management zones", revised total dissolved solids (TDS) and nitrate-nitrogen objectives for those zones, revised TDS and nitrogen wasteload allocations for discharges of recycled water to the Santa Ana River and its tributaries, and revised reach designations for certain surface waterbodies.[57]

A Task Force was formed in 1995 to provide oversight, supervision, and approval of a study to evaluate the impact of TIN and TDS on water resources in the Watershed. The study is coordinated by the Santa Ana Watershed Project Authority (SAWPA), a joint

[56] Further information on the triennial review can be found on the Santa Ana RWQCB website at: http://www.swrcb.ca.gov/rwqcb8/water_issues/programs/basin_plan/basin_plan_review.shtml

[57] Additional information on this Amendment can be obtained on the Santa Ana RWQCB website at: http://www.swrcb.ca.gov/rwqcb8/water_issues/programs/basin_plan/docs/bpa_tds/Staff_Report_final.pdf

powers agency of which OCWD and OCSD are member agencies, and is investigating questions related to TIN and TDS management in the Watershed, including groundwater subbasin water quality objectives, subbasin boundaries, and regulatory approaches to wastewater reclamation and recharge.[58]

Water Resources and Water Quality Management

Numerous water resource management studies and projects, focused on water quality and/or water supply, are in progress in the Region under the auspices of a variety of parties. Some of these activities bear directly on the implementation of the Basin Plan, while others may lead to future Basin Plan amendments to incorporate appropriate changes, such as revised regulatory strategies for various dischargers. These investigations and the implementation of appropriate physical solutions are an essential and integral part of the effort to restore and maintain water quality in the Region.

4.2 REGIONAL DEMAND AND SUPPLIES COMPARISON

Metropolitan Water District Supplies and Demands

As previously noted, the City of Huntington Beach obtains its imported water from MWDOC, its Metropolitan member agency. As a part of its Integrated Water Resources Plan Implementation Report process (IRP)[59], and more recently in its November 2010 Regional Urban Water Management Plan (RUWMP), Metropolitan chose the year 1977 as the single driest year since 1922, and the years 1990-1992 as the driest multiple (3) years over that same period. These years were selected because they represent the timing of the least amount of available water resources from the SWP, a major source of Metropolitan's supply.

Concurrently with the preparation of its 2010 RUWMP, Metropolitan also prepared a 2010 IRP Update, which was adopted by the Metropolitan Board of Directors on October 12, 2010.

Based on Metropolitan's 2010 RUWMP and 2010 IRP, Tables 4.2-1 and 4.2-2 herein summarize Metropolitan's current imported supply availability and demand projections for average year, single dry year, and multiple dry years over the 20-year period beginning in 2015 and ending in 2035. The supply projections include current programs and programs under development as well as in-region storage and programs. Reference is made to Metropolitan's 2010 RUWMP for a description of these programs under development, but they include only programs Metropolitan is confident can be implemented and do not include other more speculative regional programs. Even if all the programs under development are removed, there are surpluses in all years and

[58] Santa Ana Regional Water Quality Control Board. Watershed Management Initiative. Revised May 2004.

[59] Metropolitan develops Integrated Water Resources Plans (IRPs), which lay out how Metropolitan will secure and provide water to its customer base. These IRPs utilize hydrological and other data provided by DWR and are updated periodically through IRP Report Updates to reflect changing conditions.

scenarios listed below. Demands are firm demands on Metropolitan and also include Metropolitan's commitments for IID-SDCWA transfers and canal lining.

Table 4.2-1, summarizing single dry year demand data shows surpluses in all years ranging from a low of 148.3 percent (projected supply during a single dry year as a percent of single dry year demand) in 2015 to a high of 182.3 percent in 2020. Similarly, Table 4.2-2 shows surpluses in all years ranging from a low of 118.6 percent (projected supply during an average year of a multiple (three) year dry period as a percent of average multiple year demand in 2015 to a high of 142.5 percent in 2025.

Table 4.2-1
Metropolitan's Regional Water Supply/Demand Reliability Projections (AFY)
for Average and Single Dry Years

Row	Region Wide Projections	2015	2020	2025	2030	2035
Supply Information						
A	Projected Supply During an Average Year[1]	4,073,000	4,499,000	5,140,000	4,998,000	4,865,000
B	Projected Supply During a Single Dry Year[1]	3,219,000	3,644,000	4,013,000	3,859,000	3,726,000
C = B/A	Projected Supply During a Single Dry Year as a % of Average Supply	**79.0**	**81.0**	**78.1**	**77.2**	**76.6**
Demand Information						
D	Projected Demand During an Average Year[2]	2,006,000	1,933,000	1,985,000	2,049,000	2,106,000
E	Projected Demand During a Single Dry Year[2]	2,171,000	2,162,000	2,201,000	2,254,000	2,319,000
F = E/D	Projected Demand During a Single Dry Year as a % of Average Demand	**108.2**	**111.8**	**110.9**	**110.0**	**110.1**
Surplus Information						
G = A-D	Potential Surplus During an Average Year	2,067,000	2,566,000	3,155,000	2,949,000	2,759,000
H = B-E	Potential Surplus During a Single Dry Year	1,048,000	1,482,000	1,812,000	1,605,000	1,407,000
Additional Supply Information						
I = A/D	Projected Supply During an Average Year as a % of Demand During an Average Year	**203.0**	**232.7**	**258.9**	**243.9**	**231.0**
J = A/E	Projected Supply During an Average Year as a % of Demand During a Single Dry Year Demand	**187.6**	**208.1**	**233.5**	**221.7**	**209.8**
K = B/E	Projected Supply During a Single Dry Year as a % of Single Dry Year Demand (including surplus)	**148.3**	**168.5**	**182.3**	**171.2**	**160.7**

[1] Projected supplies include current supplies and supplies under development. This data was obtained from Metropolitan's 2010 RUWMP, adopted by the Board on November 9, 2010 (Tables 2-9 and 2-11).

[2] Demand data obtained from Metropolitan's 2010 RUWMP, adopted by the Board on November 9, 2010 (Tables 2-9 and 2-11).

Table 4.2-2
Metropolitan's Regional Water Supply/Demand Reliability Projections (AFY)
for Average and Multiple Dry Years

Row	Region Wide Projections	2015	2020	2025	2030	2035
Supply Information						
A	Projected Supply During an Average Year[1]	4,073,000	4,499,000	5,140,000	4,998,000	4,865,000
B	Projected Supply During Average of 3 Dry Year Period[1]	2,652,000	2,970,000	3,253,000	3,214,000	3,170,000
C = B/A	Projected Supply During the Average Year of a 3-Dry Year Period as a % of Average Supply	**65.1**	**66.0**	**63.3**	**64.3**	**65.2**
Demand Information						
D	Projected Demand During an Average Year[2]	2,006,000	1,933,000	1,985,000	2,049,000	2,106,000
E	Projected Demand During Average of 3-Dry Year Period [2]	2,236,000	2,188,000	2,283,000	2,339,000	2,399,000
F = E/D	Projected Demand During the Average Year of a 3-Dry Year Period as a % of Average Demand	**111.5**	**113.2**	**115.0**	**114.2**	**113.9**
Surplus Information						
G = A-D	Potential Surplus During an Average Year	2,067,000	2,566,000	3,155,000	2,949,000	2,759,000
H = B-E	Potential Surplus During Average of 3-Dry Year Period	416,000	782,000	970,000	875,000	771,000
Additional Supply Information						
I = A/D	Projected Supply During an Average Year as a % of Demand During an Average Year	**203.0**	**232.7**	**258.9**	**243.9**	**231.0**
J = A/E	Projected Supply During an Average Year as a % of Demand During an Average Year of a 3-Dry Year Period	**182.2**	**205.6**	**225.1**	**213.7**	**202.8**
K = B/E	Projected Supply During an Average Year of a 3-Dry Year Period as a % of an Average 3-Dry Year Demand	**118.6**	**135.7**	**142.5**	**137.4**	**132.1**

[1] Projected supplies include current supplies and supplies under development. This data was obtained from Metropolitan's November 2010 RUWMP, adopted by the Board on November 9, 2010, (Tables 2-10 and 2-11).

[2] Demand data obtained from Metropolitan's November 2010 RUWMP, adopted by the Board on November 9, 2010, (Tables 2-10 and 2-11).

4.3 VULNERABILITY OF WATER SUPPLY TO SEASONAL OR CLIMATIC SHORTAGE

As mentioned in Section 1, the City of Huntington Beach is located in a semi-arid coastal environment. The area must depend on imported water supplies since natural precipitation is limited and the City cannot pump enough to fully meet its needs. Climatological data in California has been recorded since the year 1858. During the twentieth century, California has experienced three periods of severe drought: 1928-34, 1976-77 and 1987-91. The year 1977 is considered to be the driest year of record in the Four Rivers Basin by DWR. These rivers flow into the San Francisco Bay Delta and are the main source of water for the SWP. Southern California and, in particular, Orange, sustained few adverse impacts from the 1976-77 drought, but the 1987-91 and the 2008-2010 droughts created considerably more concern for Southern California and Orange County.

As a result, the City is vulnerable to water shortages due to its climatic environment and seasonally hot summer months. Response to a future drought should follow the water use efficiency mandates of the Metropolitan Water Surplus and Drought Management (WSDM) Plan, along with implementation of the appropriate stage of the City's Phased Water Conservation Plan. These programs are more specifically discussed in Section 8.

4.4 PLANNED WATER SUPPLY PROJECTS AND PROGRAMS TO MEET PROJECTED WATER USE

4.4.1 City of Huntington Beach Projects

The City continually reviews practices that will provide its customers with adequate and reliable supplies. Trained staff continues to ensure the water quality is safe and the water supply will meet present and future needs in an environmentally and economically responsible manner. The City consistently coordinates its long-term water shortage planning with MWDOC and OCWD as described in other sections of this Plan.

The City projects water demand will remain relatively constant over the next 25 years due to minimal growth combined with water conservation efforts. Any new projects will be implemented to better manage the Orange County Groundwater Basin resource and to replace or upgrade inefficient wells, rather than to support population growth and new development. Projects included in the City Capital five-year Capital Improvement program will improve the City's water supply reliability and enhance water operations. Those projects include the following:

- Distribution System Improvements – Various improvements to increase system redundancy and reliability.
- Water Main Replacements – Water main replacements at various locations throughout the City. These new pipelines will replace older deteriorated lines, thereby improving system reliability.

- Well No. 8 – Well No. 8 has been out of service for several years because it produced sub-potable water. This well will be converted to an irrigation well, which will reduce domestic water demand from large turf areas and landscaping.
- Well Nos. 3, 6, and 9 – A granular activated carbon filter will be installed at this well to reduce odor problems and increase long-term reliability of the well.
- Well No. 10 Rehabilitation – This well was damaged by a local fire in September 2009. The well will be rehabilitated to improve system reliability.
- Well No. 12 – On going studies regarding mitigation efforts to reduce chloride levels.
- Peck Booster Station – This station will be converted to dual power/drive to increase reliability and flexibility of operations.
- Edwards Hill Booster Station – This station has undergone major electrical rehabilitation to ensure station performance and reliability.
- Water System Reliability Studies – Modeling work will be performed to suggest ways to increase system reliability, fire flow capacity and operational flexibility.
- Water Master Plan – The City's Water Master Plan will be updated with an eye toward improving overall system reliability.
- Talbert Lake Diversion Project – To divert urban runoff to Central Park for natural treatment and water reuse.

4.4.2 Regional Agency Projects

Since the City purchases imported water from the SWP and the Colorado River from Metropolitan, via MWDOC, the projects implemented by Metropolitan to secure their water supplies have a direct effect on Huntington Beach. In addition, OCWD's planned projects and groundwater and recycled water programs also benefit the City.

Metropolitan Water District of Southern California (Metropolitan)

Metropolitan is implementing water supply alternative strategies for the region and on behalf of their member agencies to ensure available water in the future. Some of the strategies identified in Metropolitan's 2010 UWMP and referenced in previous sections of this Plan include:

- Conservation
- Water recycling and groundwater recovery
- Storage and groundwater management programs within the Southern California region
- Storage programs related to the SWP and the Colorado River

- Other water supply management programs outside of the region

These programs and strategies are discussed in further detail below.

Conservation Target

Metropolitan's conservation policies and practices are shaped by its Integrated Resource Plan and the California Urban Water Conservation Council (CUWCC) *Memorandum of Understanding Regarding Water Conservation in California*.

Recycled Water, Groundwater Recovery, and Desalination Target

Metropolitan supports the use of alternative water supplies such as recycled water and degraded groundwater when there is a regional benefit to offset imported water supplies. Currently, about 335 TAF per year of recycled water is permitted for use within Metropolitan's service area. Recycled uses include irrigation, commercial and industrial, seawater intrusion barriers, and groundwater recharge applications. Metropolitan estimates that an additional 458 TAF per year of new recycled water usage can be developed by 2035 with a total potential recycled water usage of 1.0 MAF by 2050. Most of the current recycled usage is for irrigation, groundwater replenishment and seawater barriers, with smaller amounts used in industrial applications.

Metropolitan recognizes the importance of member agencies developing local supplies and has implemented several programs to provide financial assistance. Metropolitan's incentive programs include:

- *Competitive LRP*: Supports the development of cost-effective water recycling and groundwater recovery projects that reduce demands for imported supplies.
- *Seawater Desalination Program (SDP)*: Supports the development of seawater desalination within Metropolitan's service area. Additional information on the SDP program is included later in this section.

Regional Groundwater Conjunctive Use Target

Other programs within Metropolitan, which are aimed at maximizing water supplies include storage and groundwater management programs. The Integrated Resource Plan Update identified the need for dry-year storage within surface water reservoirs and the need for groundwater storage. In 2002, Diamond Valley Lake reached its full storage capacity of 800,000 AF. Approximately 400,000 AF of this total is dedicated for dry-year storage. Metropolitan has also developed a number of local programs to increase storage in the groundwater basins. The programs include:

- *North Las Posas*: In 1995, Metropolitan and Calleguas Municipal Water District developed facilities for groundwater storage and extraction from the North Las Posas Basin. Metropolitan has the right to store up to 210,000 AF of water in this

basin. It is expected the North Las Posas program will yield 47,000 AF of groundwater from the basin each year.

- *Proposition 13 Projects*: In 2000, DWR selected Metropolitan to receive financial funding to help fund the Southern California Water Supply Reliability Projects Program. The program coordinates eight conjunctive use projects with a total storage capacity of 195 TAF and a dry-year yield of 65 TAF per year.
- *Raymond Basin*: In January 2000, Metropolitan entered into agreements with the City of Pasadena and Foothill Municipal Water District to implement a groundwater storage program anticipated to yield 22 TAF per year by 2010.
- *Other Programs*: Metropolitan intends to expand the conjunctive use programs to add another 80 TAF to groundwater storage. Other basins in the area are being evaluated for possible conjunctive use projects.

State Water Project Target

The major actions Metropolitan is completing to improve SWP reliability include the following previously referenced programs:

- Sacramento Valley Water Management Agreement (Phase 8 Settlement)
- Monterey Amendment
- SWP Terminal Storage
- Yuba Dry-year Water Purchase Program
- DWCV SWP Table A Transfer
- DWCV Advance Delivery Program
- DWCV Other SWP Deliveries

Colorado River Aqueduct (CRA) Target

Metropolitan also receives imported water from the CRA. Metropolitan, Imperial IID and Coachella Valley Water District (CVWD) executed the Quantification Settlement Agreement (QSA) in October 2003. The QSA established the baseline water use for each agency and facilitated the transfer of agricultural water to urban uses. A number of programs have been identified to assist Metropolitan meet their target goal of 1.2 MAF per year from the CRA. The following information on these programs has been extracted from the Metropolitan's 2010 Regional UWMP:

- *Imperial Irrigation District / Metropolitan Water District Conservation Program:* Under a 1988 agreement, Metropolitan has funded water efficiency improvements within IID's service area in return for the right to divert the water conserved by those investments. Under this program, IID implemented a number of structural and nonstructural measures, including the lining of existing earthen canals with concrete, constructing local reservoirs and spill interceptor canals, installing non-

leak gates, and automating the distribution system. Other implemented programs include the delivery of water to farmers on a 12-hour rather than a 24-hour basis and improvements in on-farm water management through the installation of tailwater pumpback systems, and drip irrigation systems. Through this program, Metropolitan obtained an additional 105 TAF per year, on average upon completion of program implementation. Execution of the QSA and amendments to the 1988 and 1989 agreements resulted in changes in the availability of water under the program, extending the term to 2078 if the term of the QSA extends through 2077 and guaranteeing Metropolitan at least 85 TAF per year. The remainder of the conserved water is available to CVWD.

- *Palo Verde Land Management, Crop Rotation, and Water Supply Program*: In May 2004, Metropolitan's Board authorized a 35-year land management, crop rotation, and water supply program with PVID. Under the program, participating farmers in PVID are paid to reduce their water use by not irrigating a portion of their land. A maximum of 29 percent of the lands within the Palo Verde Valley can be fallowed in any given year. Under the terms of the QSA, water savings within the PVID service area are made available to Metropolitan. This program provides up to 133 TAF of water available to Metropolitan in certain years, and a minimum of 33 TAF per year. As previously noted, in 2005, 2006, 2007, 2008, and 2009 approximately 108.7, 105.0, 72.3, 94.3, and 102.2 TAF of water, respectively, were saved and made available to Metropolitan. In March 2009, Metropolitan and PVID entered into a one-year supplemental fallowing program within PVID that provides for the fallowing of additional acreage, with savings projected to be as much as 62 TAF. Of that total, 24.1 TAF of water was saved in 2009, with the balance to be made available in 2010.
- *Southern Nevada Water Authority and Metropolitan Storage and Interstate Release Agreement*: Southern Nevada Water Authority (SNWA) has undertaken extraordinary water conservation measures to maintain its consumptive use within Nevada's basic apportionment of 300 TAF. The success of the conservation program has resulted in unused basic apportionment for Nevada. As SNWA expressed interest in storing a portion of the water with Metropolitan, the agencies along with the United States and the Colorado River Commission of Nevada entered into a storage and interstate release agreement in October 2004. Under the agreement, additional Colorado River water supplies are made available to Metropolitan when there is space available in the CRA to receive the water. Metropolitan has received 70 TAF through 2009. SNWA may call on Metropolitan to reduce its Colorado River water order to return this water no earlier than 2019, unless Metropolitan agrees otherwise.
- *Lower Colorado Water Supply Project*: In March 2007, Metropolitan, the City of Needles, and the USBR executed a Lower Colorado Water Supply Project contract. Under the contract, Metropolitan receives, on an annual basis, Lower Colorado Water Supply Project water unused by Needles and other entities with no rights or insufficient rights to use of Colorado River water in California, the beneficiaries of the project. A portion of the payments made by Metropolitan to

Needles are placed in a trust fund for potentially acquiring a new water supply for Needles and other users of the Project should the groundwater pumped from the project's wells become too saline for use. In 2009, Metropolitan received 2.3 TAF from this project.

- *Lake Mead Storage Program*: In May 2006, Metropolitan and the USBR executed an agreement for a demonstration program that allowed the agency to leave conserved water in Lake Mead that would otherwise have been used in 2006 and 2007. USBR would normally make unused water available to other Colorado River water users, so the program included a provision that water left in Lake Mead must be conserved through extraordinary conservation measures and not simply be water that was not needed by Metropolitan in the year it was stored. This extraordinary conservation was accomplished through savings realized under the Palo Verde Land Management, Crop Rotation, and Water Supply Program. Through the two-year demonstration program, Metropolitan created 44.8 TAF of "Intentionally Created Surplus" (ICS) water. In December 2007, Metropolitan entered into agreements to set forth the rules under which ICS water is developed, and stored in and delivered from Lake Mead. The amount of water stored in Lake Mead, created through extraordinary conservation, that is available for delivery in a subsequent year is reduced by a one-time deduction of five percent, resulting in additional system water in storage in the lake, and an annual evaporation loss, beginning in the year following the year the water is stored. Metropolitan created 55.8 TAF of ICS water through the Palo Verde Land Management, Crop Rotation, and Water Supply Program in 2009.

  As of January 1, 2010, Metropolitan had a total of 79.8 TAF of Extraordinary Conservation ICS water in Lake Mead. The December 2007 federal guidelines concerning the operation of the Colorado River system reservoirs provided the ability for agencies to create "System Efficiency ICS" through the development and funding of system efficiency projects that save water that would otherwise be lost from the Colorado River. To that end, in 2008 the Central Arizona Water Conservation District (CAWCD), SNWA, and Metropolitan contributed funds for the construction of the Drop 2 Reservoir by the USBR. The purpose of the Drop 2 Reservoir is to increase the capacity to regulate deliveries of Colorado River water at Imperial Dam reducing the amount of excess flow downstream of the dam by approximately 70 TAF annually. In return for its $28.7 million contribution toward construction, 100 TAF of water that remains stored in Lake Mead was assigned to Metropolitan as System Efficiency ICS. As of January 1, 2010, Metropolitan had 66 TAF of System Efficiency ICS water in Lake Mead.

  In 2009, Metropolitan entered into an agreement with the United States, SNWA, the Colorado River Commission of Nevada, and CAWCD to have USBR conduct a one-year pilot operation of the Yuma Desalting Plant at one-third capacity. The pilot operation began in May 2010 and is providing data for future decision making regarding long-term operation of the Plant and developing a near-term

water supply. Metropolitan's contribution toward plant operating costs is expected to secure 23.2 TAF of System Efficiency ICS by 2011.

- *Hayfield Groundwater Storage Program*: The Hayfield Groundwater Storage Program will allow CRA water to be stored in the Hayfield Groundwater Basin in east Riverside County (about 50 miles east of Palm Springs) for future withdrawal and delivery to the CRA. In June 2000, the Metropolitan Board approved the implementation of the Hayfield program and authorized storage of 800 TAF of CRA supplies when available. As of 2003, there were over 70 TAF in storage. At that time, construction of facilities for extracting the stored water began, but it was then deferred because drought conditions in the Colorado River watershed resulted in a lack of surplus supplies for storage. A prototype well was completed in August 2009. Hydrogeologic investigations indicate that conversion of the prototype well into a production well could extract as much as 5 TAF per year of previously stored water. When water supplies become more plentiful, Metropolitan may pursue this program and develop storage capacity of about 400 TAF.

CVP/SWP Storage and Transfers Target

Metropolitan has focused on voluntary short and long-term transfer and storage programs with CVP and other SWP contractors. These previously referenced programs include:

- Semitropic Storage Program
- Arvin-Edison Storage Program
- San Bernardino Valley Metropolitan Storage Program
- Kern-Delta Water District Storage Program
- Mojave Storage Program
- Central Valley Transfer Programs

Metropolitan's 2010 Regional UWMP indicates these programs can supply 402,000 AFY, 306,000 AFY and 274,000 AFY in average, single dry and multiple dry years, respectively in the year 2030.[60]

[60] MWD's 2010 Regional UWMP, Section 7

Municipal Water District of Orange County (MWDOC) Projects

Sufficient water storage, transfer and exchange, supply, and recycling programs will help to ensure adequate water supplies in the future and in time of drought. The need for local supplies and storage intensifies with Southern California's and the Orange County region's dependence on imported water to serve water demands. One of the most effective forms of storage in a highly dry and arid climate is conjunctive use wherein water is stored under ground during wet periods and pumped out during dry or drought periods.

Although MWDOC is not responsible for carrying out specific supply development projects in the region, the MWDOC 2010 Regional Urban Water Management Plan discusses a number of water supply opportunities in Orange County. Additional details on each of these projects or programs can be found in Section 7 of MWDOC's RUWMP.

Orange County Groundwater Conjunctive Use Program

As discussed above, the Orange County Groundwater Conjunctive Use Program was selected by Metropolitan in June 2003, funded by Proposition 13, to construct groundwater conjunctive use projects that would store imported water in wet years for use in dry years. This is a 25-year project between MWDOC, OCWD, and Metropolitan to store up to 60,000 AF of imported water in the Orange County groundwater basin for this purpose, extracting up to 20,000 AF of water during dry periods from 7-10 strategically sited wells. Although the City was not selected to participate in this program, the additional wells would reduce the region's dependence on imported water during dry periods and would provide greater reliability.

Transfer and Exchange Opportunities

- *Mesa Consolidated Water District:* Mesa plans to expand their Colored Water treatment Facility. With this expansion, Mesa is exploring opportunities that may develop into potential transfer or exchange opportunities. These would include the sale of excess pumped water from the expansion to neighboring agencies.

- *IRWD Strand Ranch Water Banking Program:* Irvine Ranch Water District (IRWD) has completed negotiations with Metropolitan and MWDOC and prepared an agreement that will accommodate the recharge, storage and recovery of SWP water at the IRWD Strand Ranch Integrated Banking Project and delivery by exchange of this water to the IRWD service area. The project involved 50,000 AF of storage capacity located in Kern County.

Water Supply Projects and Programs

- *Baker Water Treatment Plant:* The Baker Pipeline Regional Water Treatment Plant is a 25 MGD proposed regional project that will be constructed at the

existing IRWD Baker Filtration Plant site in the City of Lake Forest. The plant will treat untreated water from the Santiago Lateral and Irvine Lake delivered through the Baker Pipeline. The project will provide supply reliability to south Orange County by increasing local treatment capability from multiple water sources. The project is scheduled to begin construction in 2012 and come on line in 2013, providing 28,000 AFY or additional treated water to south County agencies.

- *North Orange County Recycled Water Feasibility Study:* MWDOC, along with the City of La Habra, conducted a study to determine the feasibility of a recycled water system in North Orange County. The potential customers would include La Habra, Buena Park and Fullerton and the project would include a 2 MGD treatment plant located in the City of La Habra. Next steps will be a detailed investigation and pursuit of project funding as well as pursuing additional users.

- *YLWD Recycled Water Study:* Yorba Linda Water District (YLWD) is completing a Water Recycling Facilities Planning Study which will investigate construction of a 5 MGD water recycling facility.

- *IRWD Interconnection Project:* This project became operational in 2009 and involved construction of a permanent interconnection and pumping facilities between the IRWD potable water system and the Joint Regional Transmission Main and the Aufdenkamp Transmission Main that conveys water into South Orange County. The project has the ability to transfer up to 30 cfs of supplies during emergency situations.

- *SMWD Upper Chiquita Reservoir Project:* Santa Margarita Water District (SMWD) is constructing the Upper Chiquita Reservoir with a capacity of 244 MG, near Oso Parkway and the 241 Toll Road. The project will supply water to South Orange County agencies during planned and unplanned service outages and emergencies. Construction is well underway and expected to be completed in summer 2011.

- *SCWD Aliso Creek Streamflow Recovery Facilities Project:* South Coast Water District (SCWD) has conducted a preliminary investigation of a project to intercept and treat a portion of the urban runoff flows in Aliso Creek to supplement their potable water supply. The project would supply up to 2 MGD of product water to their potable water system or for blending with recycled water supply.

- *San Juan Capistrano Recycled Water:* The City of San Juan Capistrano is currently working with its neighboring agencies, SMWD and MNWD, to make arrangements to use recycled water, when available.

- *ETWD Recycled Water Distribution Capacity Expansion:* El Toro Water District (ETWD) is currently in the planning stage of a significant expansion to its

recycled water distribution capacity. The proposed project would construct a new recycled water distribution system supplied by recycled water from Moulton Niguel Water District (MNWD) and IRWD. The proposed project is expected to be in service by 2015 and would increase ETWD's recycled water supply by as much as 750 AFY.

Brackish Water Desalination

- *Mesa Colored Water Treatment Facility Expansion and Garden Grove Nitrate Blending Project:* These two projects were described previously under in Section 3 under Orange County Groundwater Basin Groundwater Quality Protection Projects.

- *SCWD Capistrano Beach Groundwater Recovery Facility Expansion:* SCWD plans to expand their current 1 MGD Groundwater Recovery Facility to reach the goal of 2,000 AFY. The expansion is anticipated to begin in 2012 and be completed by 2014.

- *San Juan Desalter Groundwater Recovery Plant Expansion:* The current plant has been impacted by Methyl Tert-Butyl Ether (MTBE), reducing production to about 2 MGD since 2008. The installation of a Granular Activated Carbon Filter is expected to allow the full 5.1 MGD by winter of 2011 and is expected to increase capacity to 7 MGD in the future when additional wells are brought on line.

Ocean Desalination

- *Huntington Beach Seawater Desalination Project:* Poseidon Resources LLC, a private company, is developing the Huntington Beach Seawater Desalination Project to be located adjacent to the AES Power Plant in the City of Huntington Beach along Pacific Coast Highway and Newland Street. The proposed project would produce up to 50 MGD (56,000 AFY) of drinking water and will distribute water to coastal and south Orange County to provide approximately 8% of Orange County's water supply needs. The project supplies would be distributed to participating agencies through a combination of (1) direct deliveries through facilities including the East Orange County Feeder #2, the City of Huntington Beach's distribution system, and the West Orange County Water Board Feeder #2, and (2) water supply exchanges with agencies with no direct connection to facilities associated with the Project.

- *South Orange Coastal Ocean Desalination Project:* MWDOC is proposing a desalination project in joint participation with the Laguna Beach County Water District, MNWD, City of San Clemente, City of San Juan Capistrano, SCWD, and Metropolitan. The proposed project is located adjacent to the San Juan Creek in Dana Point and will provide 15 MGD (16,000 AFY) of drinking water, which is up to 25% of the needs of the participating retailer agencies.

- *Camp Pendleton Seawater Desalination Project:* San Diego County Water Authority is studying a desalination project to be located at the southwest corner of Camp Pendleton Marine Corps Base adjacent to the Santa Margarita River. The initial project would be a 50 or 100 MGD plant with expansions in 50 MGD increments up to a maximum of 150 MGD making this the largest proposed desalination plant in the United States. The project is currently in the feasibility study phase. MWDOC and south Orange County agencies are maintaining a potential interest in the project, but at this time they are only pursuing limited fact finding and monitoring of the project.

Orange County Water District (OCWD) Projects

OCWD is dedicated to maintaining a reliable supply of water for its groundwater users. As noted in Section 4.1 of this Plan, OCWD' LTFP has proposed implementation of 19 projects over the next twenty years, all aimed at increasing the basin's sustainable yield, protecting and enhancing groundwater quality and increasing operational efficiency. Additionally, as noted in Section 3.1 of this Plan, OCWD has also implemented or jointly sponsored several water quality improvement projects including the North Basin Groundwater Protection Project, South Basin Groundwater Protection Project, the Irvine Desalter, the Tustin Desalters, the Garden Grove Nitrate Removal Project, the River View Golf Course Well Conversion, the 5-mgd Mesa Consolidated Water District Ozone Oxidation Treatment Plant, and the IRWD's Deep Aquifer Treatment System (DATS).

In addition to the aforementioned projects, OCWD has also proposed or began implementation on the following twelve projects, all of which are aimed at expanding recharge operations:[61]

1. **Desilting Improvement Program –** Removal of sediment from Santa Ana River water will increase infiltration rates. A feasibility study identified proposed treatment systems for pilot testing.
2. **Mid-Basin Injection –** This project would inject high quality GWRS water into the Principal aquifer in the central portions of the Basin, where most of the pumping occurs, thereby reducing low groundwater levels due to pumping.
3. **Santiago Creek Enhanced Recharge –** Two improvements to Santiago Creek in the City of Orange are being considered to enhance recharge capacity. One project consists of cutting a water conveyance channel through a concrete-lined creek channel to deliver a flow of water downstream of Hart Park. The second project will look at the feasibility of constructing three small new recharge basins adjacent to Santiago Creek.
4. **Subsurface Recharge –** This project would involve constructing subsurface horizontal infiltration recharge galleries beneath parks or school athletic fields. These infiltration galleries would allow percolation of GWRS water, treated MWD water or filtered Santa Ana River recharge water into the basin.

[61] As referenced in Section 4.5 of the July 2009 OCWD Groundwater Management Plan Update

5. **Recharge Basin Rehabilitation –** Periodic mechanical cleaning of the basins removed clogging sediments, thereby increasing recharging capabilities.
6. **Burris and Lincoln Basins Reconfiguration –** Proposed modifications to Burris and Lincoln Basins will improve recharge capability.
7. **Five Coves and Lincoln Basins Bypass Pipeline –** Piping modifications to the Upper Five Coves, Lower Five Coves, Lincoln, and Burris basins would allow water transfers between the four basins and would eliminate the need to take Burris Basin out of service while cleaning of the other four basins.
8. **Santiago Basins Pump Station –** Reconstructing an inefficient pump station for the basins will increase recharge capacity and allow for more flexible and efficient operations.
9. **Placentia and Raymond Basins Improvements –** Planned improvements to Placentia and Raymond Basins will increase recharging capabilities in these basins.
10. **Santiago Basins Intertie –** Constructing a connection between the Bond and Blue Diamond Basins would allow greater flexibility in managing recharge water.
11. **Olive Basin Pump Station –** Planned improvements to Olive Basin including installation of a pump station and drain pipe will allow the basin to be drained, cleaned and quickly restored to service.
12. **Prado-Recharge Facilities Model –** This proposed mathematical model of Prado storage, Santa Ana River flow, and each recharge facility would simulate how the recharge system operates in conjunction with Prado storage and the river. The model would allow evaluation of changes in recharge that would occur if the District were to construct improvements to existing facilities, build new recharge facilities, or achieve increased levels of storage at Prado Dam.

Orange County Sanitation Districts (OCSD)

As mentioned earlier, OCSD supplies treated wastewater to OCWD for further treatment. OCWD relies on recycled water from OCSD's treatment facilities to protect the Basin through seawater intrusion barriers and landscape irrigation. OCSD in conjunction with OCWD have implemented the GWRS placed into operation in 2008. The GWRS project helps to maintain and improve the reliability of the region's water supply. Further discussion on water recycling is included in Section 9 of this Plan.

4.5 EXCHANGE OR TRANSFER OPPORTUNITIES

The City has not entered into any agreements for the transfer or exchange of water other than through MWDOC. However, Metropolitan is exploring options that would benefit the region. These exchanges were discussed earlier under proposed projects for the region.

4.6 DESALINATED WATER OPPORTUNITIES

Seawater desalination represents a significant opportunity to diversify the region's water resource mix with a new, locally controlled, reliable potable supply. Like conservation, recycling, urban water runoff, and other new local supplies, seawater desalination will increase regional supply reliability by offsetting existing and future demands for imported water.

Regional Desalination Projects Supported by Metropolitan

As noted in its 2010 Regional UWMP, Metropolitan continues to pursue a target for seawater desalination of 150,000 AFY by 2025, and several local and retail water agencies have identified seawater desalination as an important component of their water supply portfolio in their Urban Water Management Plans.

The implementation of large-scale seawater desalination plants in California offers many opportunities and challenges. In the past decade, advances in energy efficiency and membrane technology have reduced the cost of seawater desalination relative to the costs for imported water supplies and other supply alternatives. Challenges to seawater desalination include high capital and operation costs, pre-treatment design, addressing environmental issues, system integration, and navigating an uncertain permitting process. Metropolitan's member agencies are actively pursuing research into alternative intake and outfall technologies, process designs, and treatment alternatives, which could minimize some of the environmental issues and lower unit costs.

Metropolitan has encouraged the development of seawater desalination projects since it created the Seawater Desalination Program (SDP) in 2001. Metropolitan currently has four ongoing SDP agreements in place with a fifth one on hold. These five SDP projects, as well as three additional potential desalination projects within Metropolitan's service area, are summarized in Table 4.6.

Of the projects listed in Table 4.6, the Carlsbad Seawater Desalination project is the farthest along, having obtained all the necessary local, State and Federal permits required to begin construction. However, some legal challenges to these permits surfaced in 2010.

Metropolitan promotes the development of local seawater desalination projects by providing regional facilitation, supporting member agency projects during permit hearings and other proceedings, coordinating responses to potential legislation and regulations, and working with the member agencies to resolve related issues such as greenhouse gas emission standards and seawater intake regulations, which could impact seawater desalination projects. Metropolitan has also formed a special Board Committee to seek additional ways to promote potential projects and explore opportunities for developing regional seawater desalination supplies.

Table 4.6-1
Seawater Desalination Program (SDP) and Potential Project Status

Project	Member Agency Service Area	Annual Capacity (AFY)	Status
Long Beach Seawater Desalination Project	Long Beach Water Department	10,000	Pilot Study (SDP Agreement)
South Orange Coastal Ocean Desalination Project	Municipal Water District of Orange County	16,000-28,000	Pilot Study (SDP Agreement)
Carlsbad Seawater Desalination Project	San Diego County Water Authority	56,000	Permitting (SDP Agreement)
West Basin Seawater Desalination Project	West Basin Municipal Water District	20,000	Pilot Study (SDP Agreement)
Total SDP Desalination Projects		***102,000-114,000***	
Los Angeles DWP Desalination Project	Los Angeles DWP	28,000	On-Hold
Huntington Beach Seawater Desalination Project	Municipal Water District of Orange County	56,000	Permitting
Camp Pendleton Seawater Desalination Project	San Diego County Water Authority	56,000-168,000	Planning
Rosarito Beach Seawater Desalination Feasibility Study	San Diego County Water Authority	28,000-56,000	Feasibility Study
Total Additional Potential Desalination Projects		***168,000-308,000***	

Statewide Desalination Projects Supported by the DWR

As noted on DWR's website[62], in November 2002, California voters passed Proposition 50, the Water Security, Clean Drinking Water, Coastal and Beach Protection Act of 2002. Chapter 6(a) of Proposition 50 allocated the sum of $50 million for grants for brackish water and ocean water desalination projects. This grant program, administered by DWR, aimed to assist local public agencies in the development of new local water supplies through the construction of brackish water and ocean water desalination projects. The program also aimed to help advance water desalination technology and its use by means of feasibility studies, research and development, and pilot and demonstration projects. Two rounds of funding were conducted (2004 and 2006) under this grant program, which resulted in the investment of about $50 million to support 48 desalination projects. These projects included seven construction projects, 14 research and development projects, 15 pilot plants and demonstration projects, and 12 feasibility studies.

[62] DWR's desalination website can be accessed at this link: http://www.water.ca.gov/desalination/

The California Legislature also approved Assembly Bill 2717, which asked DWR to convene the California Water Desalination Task Force to investigate potential opportunities and impediments for using seawater and brackish water desalination, and to examine what role, if any, the State should play in furthering the use of desalination technology. A primary finding of the Task Force was that economically and environmentally acceptable desalination should be considered as part of a balanced water portfolio to help meet California's existing and future water supply and environmental needs. The Task Force arrived at 41 key findings and made 29 major recommendations relating to seawater and brackish water desalination.[63]

[63] A complete listing of the Task Force Report's findings and recommendations is available at this website: http://www.water.ca.gov/desalination/pud_pdf/Findings-Recommendations.pdf

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5 WATER SUPPLY BASELINES AND TARGETS AND WATER SUPPLY RELIABILITY COMAPARISON TABLES

5.1 WATER BASELINES AND TARGETS

To comply with the SBx7-7 water conservation legislation, water suppliers must first establish a baseline water usage, which is then used to set targets for 2015 and 2020. The SBx7-7 legislation stipulates that targets must be established by using one of four allowable methods briefly defined as follows:

- Method 1: Per capita daily use equals eighty percent of the water supplier's baseline per capita usage;
- Method 2: Per capita daily use is set based on performance standards applied to indoor residential use; landscape area water use, and commercial, industrial and institutional use;
- Method 3: Per capita daily use is set at 95 percent of the applicable State hydrologic region target based on DWR's April 30, 2011 draft 20x2020 Water Conservation Plan (Huntington Beach is in the South Coast Region 4); and
- Method 4: Per capita daily use is set based on standards consistent with CUWCC BMPs

Detailed information on the calculation of Huntington Beach's baseline water usage and 2015 and 2020 per capita water conservation targets can be found in Appendix E, a Technical Memorandum dated March 29, 2011, entitled "20x2020 Baseline Calculation & Water Use Target Method Selection.

As noted in Appendix E, the City's per capita usage baseline average, minimum baseline average and SB7x7 water conservation targets for 2015 and 2020 have been established as follows:

- Baseline Average (based on 10-year data from 1996-2005) = 159.3 gpcd
- Minimum Baseline Average (based on 5-year data from 2004-2008) = 144.6 gpcd
- 2015 Water Conservation Target = 148.4 gpcd
- 2020 Water Conservation Target = 137.4 gpcd

5.2 WATER SUPPLY RELIABILITY COMPARISON TABLES

Tables 5.2-1 through 5.2-7 compare the City's anticipated available water supply with expected demands for normal, single dry and multiple dry years beginning in 2010 and extending through 2035.

As shown on Table 5.2-1 for Normal Water Years, which includes growth projected per Appendix E, following the Total Demand row, the per capita consumption for 2020 is 137.5 gpcd, which is only slightly off the target; and the 2015 projection is 139.6 gpcd,

which is below (in compliance with) the target. Demands were developed using land use projections and then divided by the population projections from the Draft 2010 OCP. These per capita figures in Table 5.2-1 are conservative as they do not include any credit for the City's share of indirect recycled water use for the GWRS, which was over 1,000 acre-feet in 2010. Even if the GWRS indirect recycled water credit does not increase and remains at around 1,000 AFY, the 2020 per capita figure for the City would be reduced from 137.5 to 133.4 gpcd, which is 4 gpcd below the target. The City will, however, continue to pursue water conservation efforts on their own and along with MWDOC, and has elected to participate in the Orange County 20x2020 Regional Alliance for purposes of complying, regionally, as detailed in Section 2 of MWDOC's 2010 RUWMP.

Table 5.2-1
City of Huntington Beach
Projected Water Supply and Demand
Normal Water Year
(AFY – All projections rounded to nearest 10 AF)

Water Sources	2015	2020	2025	2030	2035
Supply	**Normal Years**				
MWD Projected Supply During a **Normal Year** as a % of Demand During a Normal Year [1]	203.0	232.7	258.9	243.9	231.0
Imported [2]	25,180	29,230	33,270	31,810	30,420
Local (Groundwater) [3]	20,220	20,480	20,970	21,280	21,490
Total Supply	**45,400**	**49,710**	**54,240**	**53,090**	**51,910**
Demand					
Imported [2]	12,400	12,560	12,850	13,040	13,170
Local (Groundwater) [3]	20,220	20,480	20,970	21,280	21,490
Total Demand [4]	**32,620**	**33,040**	**33,820**	**34,320**	**34,660**
Per Capita Demand (GPCD) [5]	139.6	137.5	-	-	-
% of 2010 Normal Year Demand (32,367 AF)	100.8	102.1	104.5	106.0	107.1
Supply/Demand Difference (Surplus)	**12,780**	**16,670**	**20,420**	**18,770**	**17,250**
Difference as a % of Supply	**28.1**	**33.5**	**37.6**	**35.4**	**33.2**
Difference as a % of Demand	**39.2**	**50.5**	**60.4**	**54.7**	**49.8**

[1] From Table 4.2-1, Row I

[2] Imported Water Supply = (Imported Water Demand) x (MWD Projected Supply Available During a Normal Year as a % of Demand During a Normal Year (from Table 4.2-1, Row I));
Imported Demand = 38% of Total Demand based on a BPP of 62%

[3] Groundwater demand is estimated to comprise 62% of the total demand based on a BPP of 62%. Groundwater supply is estimated to equal Groundwater demand

[4] Total Water Demand figures are based on the Agency's projections including unaccounted for water (Table 2.2-1); See Appendix E, Table titled "City of Huntington Beach Demand Projections" to view breakdown of projections of water demand from new development above OCP

[5] Total Demand in GPD/Projected Population (from Table 1.3-3)

Table 5.2-2
City of Huntington Beach
Projected Water Supply and Demand
Single Dry Water Year
(AFY – All projections rounded to nearest 10 AF)

Water Sources	2015	2020	2025	2030	2035
Supply	**Single Dry Years**				
MWD Projected Supply During a **Single Dry Year** as a % of Single Dry Year Demand (including surplus) [1]	148.3	168.5	182.3	171.2	160.7
Imported [2]	19,880	23,660	25,980	24,570	23,300
Local (Groundwater) [3]	21,890	22,910	23,250	23,410	23,660
Total Supply	**41,770**	**46,570**	**49,230**	**47,980**	**46,960**
Normal Year Supply [4]	45,400	49,710	54,240	53,090	51,910
Single Dry Supply as a % of Normal Year	92.0	93.7	90.8	90.4	90.5
Demand					
Imported [2]	13,410	14,040	14,250	14,350	14,500
Local (Groundwater) [3]	21,890	22,910	23,250	23,410	23,660
Total Demand [5]	**35,300**	**36,950**	**37,500**	**37,760**	**38,160**
Normal Year Demand [4]	32,620	33,040	33,820	34,320	34,660
% of Normal Year Demand	108.2	111.8	110.9	110.0	110.1
% of 2010 Normal Year Demand (32,367 AF)	109.1	114.2	115.9	116.7	117.9
Supply/Demand Difference (Surplus)	**6,470**	**9,620**	**11,730**	**10,220**	**8,800**
Difference as a % of Supply	**15.5**	**20.7**	**23.8**	**21.3**	**18.7**
Difference as a % of Demand	**18.3**	**26.0**	**31.3**	**27.1**	**23.1**

[1] From Table 4.2-1, Row K (includes MWD surplus supplies)

[2] Imported Water Supply (including Surplus) = (Imported Water Demand) x (MWD Projected Supply Available During a Single Dry Year as a % of Demand During a Single Dry Year (from Table 4.2-1, Row K); Imported Demand = (City's projections in a Normal Year) x (Projected Demand During a Single Dry Year as a % of Normal Demand (from Table 4.2-1, Row F)) x (38% of Total Demand based on a BPP of 62%)

[3] Groundwater Demand is estimated to comprise 62% of the Total Demand based on a BPP of 62%. Groundwater Supply is estimated to equal Groundwater Demand

[4] Normal year supply and demand from Table 5.2-1

[5] Total Water Demand = (Agency's projections in a Normal Year) x (Projected Demand During a Single Dry Year as a % of Normal Demand (from Table 4.2-1, Row F)); See Appendix E, Table titled “City of Huntington Beach Demand Projections” to view breakdown of projections of water demand from new development above OCP

Table 5.2-3
City of Huntington Beach
Projected Water Supply and Demand
Multiple Dry Water Years 2011-2015
(AFY – All projections rounded to nearest 10 AF)

Water Sources	2011	2012	2013	2014	2015
Supply	**Normal Years**		**Dry Years**		
MWD Projected Supply During Average of 3 Dry Years as a % of Average 3 Dry Year Demand (including surplus) [1]			118.6	118.6	118.6
Imported [2] [3]	22,130	22,890	16,330	16,360	16,390
Local (Groundwater) [4]	20,100	20,130	22,480	22,510	22,540
Total Supply	**42,230**	**43,020**	**38,810**	**38,870**	**38,930**
Normal Year Supply [5]	42,230	43,020	43,820	44,610	45,400
% of Normal Year	100.0	100.0	88.6	87.1	85.7
Demand					
MWD Projected Demand During Average of Multiple 3 Dry Year as a % of Normal Demand [6]			111.5	111.5	111.5
Imported [3]	12,320	12,340	13,770	13,790	13,820
Local (Groundwater) [4]	20,100	20,130	22,480	22,510	22,540
Total Demand [7]	**32,420**	**32,470**	**36,250**	**36,300**	**36,360**
Normal Year Demand [8]	32,420	32,470	32,520	32,570	32,620
% of 2010 Normal Year Demand (32,367 AF)	100.2	100.3	112.0	112.2	112.3
Supply/Demand Difference (Surplus)	**9,810**	**10,550**	**2,560**	**2,570**	**2,570**
Difference as a % of Supply	**23.2**	**24.5**	**6.6**	**6.6**	**6.6**
Difference as a % of Demand	**30.3**	**32.5**	**7.1**	**7.1**	**7.1**

[1] From Table 4.2-2, Row K

[2] 2010 Import Supply = (2010 Import Normal Year Demand) x (MWD Projected Supply Available During a Normal Year as a % of Demand During a Normal Year); 2010 MWD Projected Supply % = 2015 Normal Year Supply/2015 Normal Year Demand, assumes supplies under development not available until 2015

[3] Supply: 2011-2012 = Interpolated between 2010 Supply (from footnote 2) and 2015 Supply (from Table 5.2-1); 2013-2015 = (Imported Demand) x (Projected Supply During Average of 3 Dry Years as a % of Average 3 Dry Year Demand from Table 4.2-2, Row K); Demand is estimated to comprise 38% of the Total Demand based on a BPP of 62%

[4] Groundwater Demand is estimated to comprise 62% of the Total Demand based on a BPP of 62%. Groundwater Supply is estimated to equal Groundwater Demand

[5] Interpolated between 2010 Supply (from footnote 2) and 2015 Supply (from Table 5.2-1)

[6] From Table 4.2-2, Row F

[7] 2011-2012: Normal Year Demand; 2013-2015: (Normal Year Demand) x (Projected Demand During Average of Multiple 3 Dry Year as a % of Normal Demand); See Appendix E, Table titled "City of Huntington Beach Demand Projections" to view breakdown of projections of water demand from new development above OCP

[8] Interpolated between 2010 Normal Year Demand (32,367 AF) and 2015 Normal Year Demand (from Table 5.2-1)

Table 5.2-4
City of Huntington Beach
Projected Water Supply and Demand
Multiple Dry Water Years 2016-2020
(AFY – All projections rounded to nearest 10 AF)

Water Sources	2016	2017	2018	2019	2020
Supply	**Normal Years**		**Dry Years**		
MWD Projected Supply During Average of 3 Dry Years as a % of Average 3 Dry Year Demand (including surplus) [1]			135.7	135.7	135.7
Imported [2]	25,990	26,800	19,190	19,250	19,290
Local (Groundwater) [3]	20,270	20,330	23,070	23,130	23,190
Total Supply	**46,260**	**47,130**	**42,260**	**42,380**	**42,480**
Normal Year Supply [4]	46,260	47,120	47,990	48,850	49,710
% of Normal Year	100.0	100.0	88.1	86.8	85.5
Demand					
MWD Projected Demand During Average of Multiple 3 Dry Year as a % of Normal Demand [5]			113.2	113.2	113.2
Imported [2]	12,430	12,460	14,140	14,180	14,210
Local (Groundwater) [3]	20,270	20,330	23,070	23,130	23,190
Total Demand [6]	**32,700**	**32,790**	**37,210**	**37,310**	**37,400**
Normal Year Demand [7]	32,700	32,790	32,870	32,960	33,040
% of 2010 Normal Year Demand (32,367 AF)	101.0	101.3	115.0	115.3	115.5
Supply/Demand Difference (Surplus)	**13,560**	**14,340**	**5,050**	**5,070**	**5,080**
Difference as a % of Supply	**29.3**	**30.4**	**11.9**	**12.0**	**12.0**
Difference as a % of Demand	**41.5**	**43.7**	**13.6**	**13.6**	**13.6**

[1] From Table 4.2-2, Row K

[2] Supply: 2016-2017 = Interpolated between 2015 and 2020 Supply (from Table 5.2-1); 2013-2015 = (Imported Demand) x (Projected Supply During Average of 3 Dry Years as a % of Average 3 Dry Year Demand from Table 4.2-2, Row K); Demand is estimated to comprise 38% of the Total Demand based on a BPP of 62%

[3] Groundwater Demand is estimated to comprise 62% of the Total Demand based on a BPP of 62%. Groundwater Supply is estimated to equal Groundwater Demand

[4] Interpolated between 2015 and 2020 Supply (from Table 5.2-1)

[5] From Table 4.2-2, Row F

[6] 2016-2017: Normal Year Demand; 2018-2020: (Normal Year Demand) x (Projected Demand During Average of Multiple 3 Dry Year as a % of Normal Demand); See Appendix E, Table titled "City of Huntington Beach Demand Projections" to view breakdown of projections of water demand from new development above OCP

[7] Interpolated between 2015 and 2020 Normal Year Demand (from Table 5.2-1)

Table 5.2-5
City of Huntington Beach
Projected Water Supply and Demand
Multiple Dry Water Years 2021-2025
(AFY – All projections rounded to nearest 10 AF)

Water Sources	2021	2022	2023	2024	2025
Supply	**Normal Years**		**Dry Years**		
MWD Projected Supply During Average of 3 Dry Years as a % of Average 3 Dry Year Demand (including surplus) [1]			142.5	142.5	142.5
Imported [2]	30,040	30,850	20,870	20,960	21,060
Local (Groundwater) [3]	20,580	20,680	23,890	24,000	24,120
Total Supply	**50,620**	**51,530**	**44,760**	**44,960**	**45,180**
Normal Year Supply [4]	50,620	51,520	52,430	53,330	54,240
% of Normal Year	100.0	100.0	85.4	84.3	83.3
Demand					
MWD Projected Demand During Average of Multiple 3 Dry Year as a % of Normal Demand [5]			115.0	115.0	115.0
Imported [2]	12,620	12,670	14,650	14,710	14,780
Local (Groundwater) [3]	20,580	20,680	23,890	24,000	24,120
Total Demand [6]	**33,200**	**33,350**	**38,540**	**38,710**	**38,900**
Normal Year Demand [7]	33,200	33,350	33,510	33,660	33,820
% of 2010 Normal Year Demand (32,367 AF)	102.6	103.0	119.1	119.6	120.2
Supply/Demand Difference (Surplus)	**17,420**	**18,180**	**6,220**	**6,250**	**6,280**
Difference as a % of Supply	**34.4**	**35.3**	**13.9**	**13.9**	**13.9**
Difference as a % of Demand	**52.5**	**54.5**	**16.1**	**16.1**	**16.1**

[1] From Table 4.2-2, Row K

[2] Supply: 2021-2022 = Interpolated between 2020 and 2025 Supply (from Table 5.2-1); 2023-2025 = (Imported Demand) x (Projected Supply During Average of 3 Dry Years as a % of Average 3 Dry Year Demand from Table 4.2-2, Row K); Demand is estimated to comprise 38% of the Total Demand based on a BPP of 62%

[3] Groundwater Demand is estimated to comprise 62% of the Total Demand based on a BPP of 62%. Groundwater Supply is estimated to equal Groundwater Demand

[4] Interpolated between 2020 and 2025 Supply (from Table 5.2-1)

[5] From Table 4.2-2, Row F

[6] 2021-2022: Normal Year Demand; 2023-2025: (Normal Year Demand) x (Projected Demand During Average of Multiple 3 Dry Year as a % of Normal Demand); See Appendix E, Table titled “City of Huntington Beach Demand Projections” to view breakdown of projections of water demand from new development above OCP

[7] Interpolated between 2020 and 2025 Normal Year Demand (from Table 5.2-1)

Table 5.2-6
City of Huntington Beach
Projected Water Supply and Demand
Multiple Dry Water Years 2026-2030
(AFY – All projections rounded to nearest 10 AF)

Water Sources	2026	2027	2028	2029	2030
Supply	**Normal Years**		**Dry Years**		
MWD Projected Supply During Average of 3 Dry Years as a % of Average 3 Dry Year Demand (including surplus) [1]			137.4	137.4	137.4
Imported [2]	32,980	32,690	20,340	20,390	20,460
Local (Groundwater) [3]	21,030	21,090	24,150	24,220	24,290
Total Supply	**54,010**	**53,780**	**44,490**	**44,610**	**44,750**
Normal Year Supply [4]	54,010	53,780	53,550	53,320	53,090
% of Normal Year	100.0	100.0	83.1	83.7	84.3
Demand					
MWD Projected Demand During Average of Multiple 3 Dry Year as a % of Normal Demand [5]			114.2	114.2	114.2
Imported [2]	12,890	12,930	14,800	14,840	14,890
Local (Groundwater) [3]	21,030	21,090	24,150	24,220	24,290
Total Demand [6]	**33,920**	**34,020**	**38,950**	**39,060**	**39,180**
Normal Year Demand [7]	33,920	34,020	34,120	34,220	34,320
% of 2010 Normal Year Demand (32,367 AF)	104.8	105.1	120.3	120.7	121.0
Supply/Demand Difference (Surplus)	**20,090**	**19,760**	**5,540**	**5,550**	**5,570**
Difference as a % of Supply	**37.2**	**36.7**	**12.5**	**12.4**	**12.4**
Difference as a % of Demand	**59.2**	**58.1**	**14.2**	**14.2**	**14.2**

[1] From Table 4.2-2, Row K

[2] Supply: 2026-2027 = Interpolated between 2025 and 2030 Supply (from Table 5.2-1); 2028-2030 = (Imported Demand) x (Projected Supply During Average of 3 Dry Years as a % of Average 3 Dry Year Demand from Table 4.2-2, Row K); Demand is estimated to comprise 38% of the Total Demand based on a BPP of 62%

[3] Groundwater Demand is estimated to comprise 62% of the Total Demand based on a BPP of 62%. Groundwater Supply is estimated to equal Groundwater Demand

[4] Interpolated between 2025 and 2030 Supply (from Table 5.2-1)

[5] From Table 4.2-2, Row F

[6] 2026-2027: Normal Year Demand; 2028-2030: (Normal Year Demand) x (Projected Demand During Average of Multiple 3 Dry Year as a % of Normal Demand); See Appendix E, Table titled “City of Huntington Beach Demand Projections” to view breakdown of projections of water demand from new development above OCP

[7] Interpolated between 2025 and 2030 Normal Year Demand (from Table 5.2-1)

Table 5.2-7
City of Huntington Beach
Projected Water Supply and Demand
Multiple Dry Water Years 2031-2035
(AFY – All projections rounded to nearest 10 AF)

Water Sources	2031	2032	2033	2034	2035
Supply	**Normal Years**		**Dry Years**		
MWD Projected Supply During Average of 3 Dry Years as a % of Average 3 Dry Year Demand (including surplus) [1]			132.1	132.1	132.1
Imported [2]	31,530	31,250	19,740	19,780	19,820
Local (Groundwater) [3]	21,320	21,370	24,380	24,430	24,480
Total Supply	**52,850**	**52,620**	**44,120**	**44,210**	**44,300**
Normal Year Supply [4]	52,850	52,620	52,380	52,150	51,910
% of Normal Year	100.0	100.0	84.2	84.8	85.3
Demand					
MWD Projected Demand During Average of Multiple 3 Dry Year as a % of Normal Demand [5]			113.9	113.9	113.9
Imported [2]	13,070	13,090	14,940	14,970	15,000
Local (Groundwater) [3]	21,320	21,370	24,380	24,430	24,480
Total Demand [6]	**34,390**	**34,460**	**39,320**	**39,400**	**39,480**
Normal Year Demand [7]	34,390	34,460	34,520	34,590	34,660
% of 2010 Normal Year Demand (32,367 AF)	106.3	106.5	121.5	121.7	122.0
Supply/Demand Difference (Surplus)	**18,460**	**18,160**	**4,800**	**4,810**	**4,820**
Difference as a % of Supply	**34.9**	**34.5**	**10.9**	**10.9**	**10.9**
Difference as a % of Demand	**53.7**	**52.7**	**12.2**	**12.2**	**12.2**

[1] From Table 4.2-2, Row K

[2] Supply: 2031-2032 = Interpolated between 2030 and 2035 Supply (from Table 5.2-1); 2033-2035 = (Imported Demand) x (Projected Supply During Average of 3 Dry Years as a % of Average 3 Dry Year Demand from Table 4.2-2, Row K); Demand is estimated to comprise 38% of the Total Demand based on a BPP of 62%

[3] Groundwater Demand is estimated to comprise 62% of the Total Demand based on a BPP of 62%. Groundwater Supply is estimated to equal Groundwater Demand

[4] Interpolated between 2030 and 2035 Supply (from Table 5.2-1)

[5] From Table 4.2-2, Row F

[6] 2031-2032: Normal Year Demand; 2033-2035: (Normal Year Demand) x (Projected Demand During Average of Multiple 3 Dry Year as a % of Normal Demand); See Appendix E, Table titled "City of Huntington Beach Demand Projections" to view breakdown of projections of water demand from new development above OCP

[7] Interpolated between 2030 and 2035 Normal Year Demand (from Table 5.2-1)

5.3 LOW-INCOME PROJECTED WATER DEMANDS

The California Water Code, Division 6, Part 2.6, Section 10631.1[64] requires each urban water retailer to include projected water use for single family and multi-family residential housing needed for lower income households as defined in Section 50079.5[65] of the Health and Safety Code, as identified in the housing element of the City.

The City of Huntington Beach's fair share for affordable housing units under the 2008-2014 Regional Housing Needs Assessment (RHNA) requirements is as shown in Table 5.3-1.[66]

Table 5.3-1
City of Huntington Beach Share of Regional Housing Needs
2008-2014 RHNA

Income Group	Number of Units	Percentage
Very Low	454	22 %
Low	369	17 %
Moderate	414	20 %
High	855	41 %
TOTAL	**2,092**	**100.0%**

As shown in Table 5.3-1, the very low and low income dwelling units total to 823 (454+369) by 2014, which are the lower income housing units subject to the new Water Code requirements described in the first paragraph of this section. According to the City's 2010 Housing Element Status Report approved at the City Council meeting of May 16, 2011, a total of 51 very low and 35 low income units were completed toward the above goals by the end of the calendar year 2010. That leaves a remaining need for 737 very low and low income units (823-86). Using the highest per residential dwelling unit (DU) demand factor for new developments (169 gal/DU from Appendix E for the Downtown Area) times the 737 dwelling units, these low income units would generate a demand of 124,553 gpd or 140 AFY by 2014. There is more than enough increase shown in the M&I (and specifically residential) water demand increases to accommodate this increase in low income housing shown in the City's projections between 2010 and 2015.

[64] All California Law Codes can be accessed at this website: http://www.leginfo.ca.gov/calaw.html; Section 10631.1 of the California Water Code is available at this website: http://www.leginfo.ca.gov/cgi-bin/displaycode?section=wat&group=10001-11000&file=10630-10634

[65] Section 500.79.5 of the Health and Safety Code is available at this website: http://www.leginfo.ca.gov/cgi-bin/displaycode?section=hsc&group=50001-51000&file=50050-50106

[66] City of Huntington Beach 2008-2014 Housing Element.

5.4 WATER USE REDUCTION PLAN

As demonstrated from the historical water usage data presented in Appendix E, the City has realized substantial reductions in per capita water usage in recent years. In fact, the City has met its 2015 water conservation target for each of the past six years (2005-2010) and has met its 2020 target for the past two years (2009 and 2010). Even ignoring the past two drought years (2009 and 2010) and assuming the three year non-drought period preceding that (2006-2008) was more representative (when baseline per capita usage was 140 gpcd), it appears that achieving the 2015 and 2020 water conservation per capita demands of 148.4 and 137.4 are well within reason. The demand projections shown in Table 5.2-1 and the text in Section 5.2 indicate that both the interim 2015 goal and the 2020 goal will be met.

The City plans to meet or exceed its SBx7-7 water conservation targets, through a variety of means including:

- Receiving additional indirect credits for recycled water use through the planned expansion of the joint OCWD/OCSD GWRS project;
- Encouraging residents and businesses in the City to conserve water;
- Educating the public through a variety of programs on the need for continued water conservation;
- Continuing to operate and maintain the water distribution system with an eye toward reducing water losses by repairing or eliminating any leaks that may develop as soon as practical;
- Encouraging or requiring new developments to install water conservation fixtures and landscape with low water use plant materials (xeriscape);
- Utilization of captured urban runoff and colored water from Well No. 8 for irrigation of parks and landscaping along Goldenwest Street.

6 WATER USE PROVISIONS

6.1 PAST, CURRENT AND PROJECTED WATER USE AMONG SECTORS

Since 1990, new connections have been added at a rate of approximately one percent per year, but that rate declined in recent years due to economic conditions. Due to new plumbing efficiency standards, landscape guidelines, and other water use efficiency programs, water demand is projected to increase at a declining rate of less than one percent per year in future years. Table 6.1-1 presents past, current and projected water use between 2005 and 2035.

Table 6.1-1
Past, Current and Projected Water Use by Billing Classification (AF)

City Billing Class	2005	2010	2015	2020	2025	2030	2035
Single Family Residential	14,707	13,754	15,526	15,708	16,029	16,252	16,384
Multi-Family Residential	6,908	6,149	7,035	7,119	7,346	7,420	7,525
Commercial	4,079	3,582	4,073	4,202	4,396	4,572	4,648
Industrial	663	511	574	574	574	574	574
Institutional/Governmental	70	155	175	176	177	178	179
Landscape Irrigation	2,605	2,651	2,981	2,982	2,983	2,984	2,985
Other - Outside of Billing System (AES Power Plant, Central Park, Meadowlark Park)	584	466	524	524	524	524	524
Subtotal	**29,616**	**27,268**	**30,888**	**31,285**	**32,031**	**32,505**	**32,820**
Unaccounted for System Losses [1]	2,758	1,611	1,729	1,751	1,793	1,819	1,837
Total Water Use	**32,374**	**28,879**	**32,616**	**33,036**	**33,823**	**34,324**	**34,657**

Source: Year 2005 and 2010 data from City of Huntington Beach for City Fiscal Year (i.e., 2010 data is for October 1, 2009 through September 30, 2010); all future water use by billing class from Table 5.2-3

[1] 2005 and 2010 unaccounted for losses are based on actual data; all other years based on an estimated average loss of 5.3% (i.e., the average percentage loss over the past five years

Unaccounted-for water is the difference between water production and water consumption and represents "lost" water. Unaccounted-for water occurs for a number of reasons:

- Water lost from system leaking, i.e., from pipes, valves, pumps, and other water system appurtenances.
- The City Fire Department performs hydrant testing to monitor the level of fire protection available throughout the City. The City Public Works Department performs hydrant flushing to eliminate settled sediment and ensure better water quality. Hydrant testing and flushing is not metered. However, this quantity of water is estimated and taken into consideration when calculating unaccounted-for water.

- Water used by the Fire Department to fight fires. This water is also not metered.
- Customer meter inaccuracies. Meters have an inherent accuracy for a specified flow range. However, flow above or below this range is usually registered at a lower rate. Meters become less accurate with time due to wear.

Unaccounted-for water was 9.9 percent in 1995/96, but according to the City's 2005 Water Master Plan, averaged 6.4% during the nine year period from 1996/97 to 2004/05. During the five year period from 2005/06 through 2009/10, unaccounted-for water has averaged 5.3 percent. Thus, over the past 14 years, unaccounted-for water has averaged 6.0 percent.

The decrease in unaccounted-for water sine 1995/96 can be partially attributed to a leak detection survey conducted for the City in 1996/97. A total of 498 miles of pipeline was surveyed, with a water loss of approximately 67,000 gpd quantified from 17 identified leaks. The annual water loss from these leaks was quantified as approximately 24.4 million gallons. The City repaired all of the leaks identified in the survey and the City has since implemented an on-going leak investigation and repair program as a measure to keep water losses to a minimum while facilitating cost savings.[67]

6.2 WATER SERVICE CONNECTIONS BY SECTOR

Table 6.2-1 shows the current and projected number of water service customers by sector from 2005 through 2035.

Table 6.2-1
Number of Water Service Connections by Billing Classification

City Billing Class	2005	2010	2015	2020	2025	2030	2035
Single Family Residential	43,887	44,147	44,420	45,459	47,464	48,725	49,562
Multi-Family Residential [1]	4,173	4,119	4,255	4,346	4,596	4,676	4,793
Commercial [2]	2,337	2,286	2,290	2,299	2,321	2,344	2,356
Institutional/Municipal [3]	591	564	564	565	565	565	566
Irrigation [4]	873	934	936	938	941	943	945
Industrial [5]	307	306	306	306	306	306	306
Total Connections	**52,168**	**52,356**	**52,772**	**53,913**	**56,193**	**57,559**	**58,527**

Note: 2005 and 2010 data from City of Huntington Beach; future projections are based on percentages proportionate to 2010 actual data.

[1] Assumed an average of 5 dwelling units per connection

[2] Assumed 200 hotel rooms per connection and 20,000 SF per connection

[3] Assumed 20,000 SF per connection

[4] Assumed 45,560 SF per connection

[5] Assumed no additional connections will be constructed

[67] City of Huntington Beach, 2005 Water Master Plan, March 2006

7 WATER DEMAND MANAGEMENT MEASURES

7.1 INTRODUCTION

On August 21, 2000, the City Council of Huntington Beach elected to become Signatory to the Memorandum of Understanding (MOU) Regarding Best Management Practices (BMPs) for Urban Water Conservation with the California Urban Water Conservation Council (CUWCC). The City was officially voted in as a member of the CUWCC at the September 21, 2000 plenary session of CUWCC.

MWDOC implements many of the urban water conservation BMPs on behalf of its member agencies, including the City of Huntington Beach. MWDOC's 2010 Regional Urban Water Management Plan should be referred to for a detailed discussion of each regional BMP program.

7.2 DETERMINATION OF DMM IMPLEMENTATION

As Signatory to the MOU, the City has committed to a good faith effort in implementing the 14 cost-effective BMPs. "Implementation" means achieving and maintaining the staffing, funding, and in general, the priority levels necessary to achieve the level of activity called for in each BMP's definition, and to satisfy the commitment by the signatories to use good faith efforts to optimize savings from implementing BMPs as described in the MOU. A BMP as defined in the MOU is a "practice for which sufficient data are available from existing water conservation practices to indicate that significant conservation or conservation related benefits can be achieved; that the practice is technically and economically reasonable and not environmentally or socially unacceptable; and that the practice is not otherwise unreasonable for most water agencies to carry out."

These 14 BMPs include technologies and methodologies that have been sufficiently documented in multiple demonstration projects that result in more efficient water use and conservation. Many of the BMPs are implemented by the City in coordination with MWDOC and their regional conservation programs. Specifically, the 14 BMPs include:

1. Water survey programs for single-family residential and multifamily residential customers
2. Residential plumbing retrofit
3. System water audits, leak detection, and repair
4. Metering with commodity rates for all new connections and retrofit of existing connections
5. Large landscape conservation programs and incentives
6. High-efficiency washing machine rebate programs
7. Public information programs

8. School education programs
9. Conservation programs for commercial, industrial, and institutional accounts
10. Wholesale agency programs
11. Conservation pricing
12. Water conservation coordinator
13. Water waste prohibition
14. Residential ultra-low-flush toilet replacement programs

As signatory to the MOU, the City is responsible for completing and submitting BMP Activity Reports to the CUWCC every two years for each year prior. The City's BMP Activity Report is a comprehensive document that shows implementation of each BMP and provides a determination of implementation from the City's 2000 UWMP. The City has maintained complete compliance with all the BMPs to date.

As noted in Section 1.2 of this UWMP, AB 1465 (2010), clarifies that urban water suppliers that are members of the CUWCC and comply with the provisions of the "*Memorandum of Understanding Regarding Urban Water Conservation in California*" dated December 10, 2008, as it may be amended (MOU), may submit their annual reports required under the CUWCC MOU as evidence of compliance without the need for any additional documentation in their UWMPs. With that in mind, the City of Huntington Beach's Activity Reports for reporting years 2006-2007 and 2008-2009 are included in Appendix F as evidence of BMP compliance. These reports indicate the City is on track for meeting BMP coverage in its service area according to the MOU.

8 WATER SHORTAGE CONTINGENCY PLAN

8.1 INTRODUCTION

California's extensive system of water supply infrastructure, its reservoirs, groundwater basins, and inter-regional conveyance facilities, mitigates the effect of short-term dry periods. Defining when a drought begins is a function of drought impacts to water users. Drought is a gradual phenomenon. Although droughts are sometimes characterized as emergencies, they differ from typical emergency events. Droughts occur slowly, over a multiyear period. Drought impacts increase with the length of a drought, as carry-over supplies in reservoirs are depleted and water levels in groundwater basins decline.

To meet short-term water demand deficiencies, and short- or long-term drought requirements, the City of Huntington Beach will implement its own water shortage policy based upon Chapter 14.18 of the City's Municipal Water Code. In addition, the City's Water Efficient Landscape Requirements, included in Chapter 14.52 of the City's Municipal Code, sets forth standards for landscape irrigation during drought and non-drought times, and acknowledges the constant need to establish long-term water efficiency. Chapter 14.16 of the Municipal Code also establishes overall Water Use Regulations, including regulations for water meters. Provisions of the City's Municipal Code will be implemented in congruence with the policy of Metropolitan, MWDOC and OCWD's water shortage/drought activities. MWDOC's policy will be based on Metropolitan's adopted Water Surplus and Drought Management Plan (WSDM Plan) as well as their Water Supply Allocation Plan as revised in June 2009. The WSDM Plan is designed to guide management of regional water supplies to achieve reliability goals for Southern California. The Water Supply Allocation Plan is designed to provide a framework for administering an allocation should a water shortage be declared.

8.2 STAGES OF ACTION

City of Huntington Beach Water Shortage Response

In the event of a water shortage, the City's Director of Public Works and the City Administrator, or their designated representative, are authorized and directed by City Council to implement provisions of the Water Management Program. All actions taken will be confirmed at the earliest practicable time by the City Council.

The Director of Public Works determines the extent of conservation or water use efficiency required through the implementation and/or termination of particular conservation stages for the City to prudently plan for and supply water to its customers. The City Council directs the City Administrator to order the appropriate stage of water conservation. However, in the case of local emergencies, the City Administrator has the authority to order the implementation of the appropriate stage of water conservation subject to ratification by the City Council within seven days thereafter.

As defined in Chapter 14.18 (included in Appendix G) of the City's Municipal Water Code, a water shortage is declared based on one or more of the following conditions:

- A general water supply shortage due to increased demand or limited supplies;
- A major failure of the supply, storage and distribution facilities of the Metropolitan Water District of Southern California or of the City occurs; and/or
- A local or regional disaster, which limits the water supply.

The City's Water Management Program includes three levels or stages of water shortage actions, which take effect upon declaration. The Water Management Program, defined in Chapter 14.18 of the Huntington Beach Municipal Code, includes mandatory conservation phase implementation. The Director of Public Works shall determine the extent of the conservation required through implementation and/or termination of particular conservation stages to allow the City to plan for and supply water to its customers, including consumption reduction up to 50%. As a MWDOC member agency, the City will follow the stages of action set forth by Metropolitan, as detailed below, which accomplish and ensure 100% reliability.

The Water Management Program includes various permanent water conservation requirements including limits on watering hours and duration, prohibition of excessive water runoff, prohibitions on hard surface wash down, obligations to fix leaks, prohibition of non-re-circulating fountains and water features, prohibition of serving water in restaurants unless expressly requested, and other requirements. As specified above, the Program includes three levels of water shortage. In addition to the permanent conservation requirements, a Level 1 Water Supply Shortage includes limits on watering to three days a week (two per week from November through March) and a specific time allotment of 72 hours to repair leaks or breaks. A Level 2 Shortage decreases the watering days to two per week (1 per week from November through March) and reduces the time allotted to fix leaks to 48 hours, plus limits on filling ornamental lakes or ponds, limits on vehicle washing, and limits on pool filling or re-filling. A Level 3 Shortage prohibits irrigation with potable water with certain exceptions, reduces the allotment of time to repair leaks to 24 hours, prohibits new water connections with certain exceptions, puts limits on issuance of new building permits, suspends consideration of annexations to the water service area, and allows the City to discontinue service to consumers who willfully violate these provisions.

Rationing Stages and Reduction Goals

To meet short-term water demand deficiencies and short- or long-term drought requirements, Huntington Beach will implement its own water shortage policy in accordance with the City's Water Management Program consistent with the policy of MWDOC, which is anticipated to be based on Metropolitan's WSDM Plan. The WSDM Plan defines the expected sequence of resource management actions Metropolitan will take during surpluses and shortages of water to minimize the probability of severe

shortages that require curtailment of full-service demands. Mandatory allocations are avoided to the extent practicable, however, in the event of an extreme shortage, an allocation plan will be adopted in accordance with the principles of the WSDM Plan and Metropolitan's Water Supply Allocation Plan, as was implemented in 2010 and 2011, until recently rescinded by Metropolitan.

Metropolitan Water Surplus and Drought Management Plan (WSDM)

In 1999, Metropolitan in conjunction with its member agencies developed the WSDM Plan.[68] This plan addresses both surplus and shortage contingencies.

The WSDM Plan will guide management of regional water supplies to achieve the reliability goals of Southern California's IRP. The IRP sought to meet long-term supply and reliability goals for future water supply planning. The WSDM Plan's guiding principle is to minimize adverse impacts of water shortage and ensure regional reliability. From this guiding principle come the following supporting principles:

- Encourage efficient water use and economical local resource programs;
- Coordinate operations with member agencies to make as much surplus water as possible available for use in dry years;
- Pursue innovative transfers and banking programs to secure more imported water for use in dry years; and
- Increase public awareness about water supply issues.

The WSDM Plan guides the operations of water resources (local resources, Colorado River, State Water Project, and regional storage) to ensure regional reliability. It identifies the expected sequence of resource management actions Metropolitan will take during surpluses and shortages of water to minimize the probability of severe shortages that require curtailment of full-service demands. Mandatory allocations are avoided to the extent practicable; however, in the event of an extreme shortage Metropolitan's Water Supply Allocation Plan will be implemented.

The WSDM Plan distinguishes between *Surpluses, Shortages, Severe Shortages,* and *Extreme Shortages.* Within the WSDM Plan, these terms have specific meaning relating to Metropolitan's capability to deliver water to the City as described below:

- **Surplus:** Metropolitan can meet full-service and interruptible program demands, and it can deliver water to local and regional storage.
- **Shortage:** Metropolitan can meet full-service demands and partially meet or fully meet interruptible demands, using stored water or water transfers as necessary.

[68] A copy of Metropolitan's WSDM Plan can be found in Appendix A.4 to the agencies November 2010 RUWMP at: http://www.mwdh2o.com/mwdh2o/pages/yourwater/RUWMP/RUWMP_2010.pdf

- **Severe Shortage:** Metropolitan can meet full-service demands only by using stored water, transfers, and possibly calling for extraordinary conservation. In a Severe Shortage, Metropolitan may have to curtail Interim Agricultural Water Program (IAWP) deliveries in accordance with IAWP.
- **Extreme Shortage:** Metropolitan must allocate available supply to full-service customers.

The WSDM Plan also defines five surplus management stages and seven shortage management stages to guide resource management activities. Each year, Metropolitan will consider the level of supplies available and the existing levels of water in storage to determine the appropriate management stage for that year. Each stage is associated with specific resource management actions designed to: 1) avoid an Extreme Shortage to the maximum extent possible; and 2) minimize adverse impacts to retail customers should an "Extreme Shortage" occur. The current sequencing outlined in the WSDM Plan reflects anticipated responses based on detailed modeling of Metropolitan's existing and expected resource mix. This sequencing may change as the resource mix evolves.

WSDM Plan Shortage Actions by Shortage Stage

When Metropolitan must make net withdrawals from storage, it is considered to be in a shortage condition. However, under most of these stages, it is still able to meet all end-use demands for water. The following summaries describe water management actions to be taken under each of the seven shortage stages.

- **Shortage Stage 1** – Metropolitan may make withdrawals from Diamond Valley Lake.
- **Shortage Stage 2** – Metropolitan will continue Shortage Stage 1 actions and may draw from out-of-region groundwater storage.
- **Shortage Stage 3** – Metropolitan will continue Shortage Stage 2 actions and may curtail or temporarily suspend deliveries to Long Term Seasonal and Replenishment Programs in accordance with their discounted rates.
- **Shortage Stage 4** – Metropolitan will continue Shortage Stage 3 actions and may draw from conjunctive use groundwater storage (such as the North Las Posas program) and the SWP terminal reservoirs.
- **Shortage Stage 5** – Metropolitan will continue Shortage Stage 4 actions. Metropolitan's Board of Directors may call for extraordinary conservation through a coordinated outreach effort and may curtail Interim Agricultural Water Program deliveries in accordance with their discounted rates. In the event of a call for extraordinary conservation, Metropolitan's Drought Program Officer will coordinate public information activities with member agencies and monitor the effectiveness of ongoing conservation programs. The Drought Program Officer will implement monthly reporting on conservation program activities and progress and will provide quarterly estimates of conservation water savings.

- **Shortage Stage 6** – Metropolitan will continue Shortage Stage 5 actions and may exercise any and all water supply option contracts and/or buy water on the open market either for consumptive use or for delivery to regional storage facilities for use during the shortage.
- **Shortage Stage 7** – Metropolitan will discontinue deliveries to regional storage facilities, except on a regulatory or seasonal basis, continue extraordinary conservation efforts, and implement its Water Supply Allocation Plan.

The overriding goal of the WSDM Plan is to never reach Shortage Stage 7, an Extreme Shortage.

Reliability Modeling of the WSDM Plan

Using a technique known as "sequentially indexed Monte Carlo simulation," Metropolitan undertook an extensive analysis of system reservoirs, forecasted demands, and probable hydrologic conditions to estimate the likelihood of reaching each Shortage Stage through 2010. The results of this analysis demonstrated the benefits of coordinated management of regional supply and storage resources. Expected occurrence of a Severe Shortage is four percent or less in most years and never exceeded six percent; equating to an expected shortage occurring once every 17 to 25 years. An Extreme Shortage was avoided in every simulation run.

Metropolitan's Water Supply Allocation Plan[69]

Metropolitan adopted its Water Supply Allocation Plan (WSAP) following critically dry conditions affected all of Metropolitan's main supply sources in 2007. Those dry conditions coupled with a ruling in the Federal Courts in August 2007 providing protective measures for the Delta smelt in the Sacramento-San Joaquin River Delta, brought uncertainty about future pumping operations from the State Water Project.

Metropolitan worked jointly with the member agency managers and staff to develop a Water Supply Allocation Plan (Plan) to address such needs. The plan that was eventually adopted includes specific formulas for calculating member agency supply allocations and the key implementation elements needed for administering an allocation should a shortage be declared. The adopted allocation formulas seek to balance the impacts of a shortage at the retail level while maintaining equity on the wholesale level, and takes into account growth, local investments, changes in supply conditions and the beneficial impacts of non-potable recycled water use and the implementation of conservation savings programs. The adopted formulas are calculated in three steps: (1) base period calculations; (2) allocation year calculations, and (3) supply allocation calculations. These steps are described in further detail below.

[69] Information presented in this section has been extracted from Metropolitan's Water Supply Allocation Plan, June 2009, a copy of which can be found in Appendix A.4 to the agencies November 2010 RUWMP at: http://www.mwdh2o.com/mwdh2o/pages/yourwater/RUWMP/RUWMP_2010.pdf

- Step 1: Base Period Calculations: The first step in calculating a water supply allocation is to estimate water supply and demand using a historical base period with established water supply and delivery data. The base period for each of the different categories of demand and supply is calculated using data from the three most recent non-shortage years (base period), which for the current allocation were 2004-2006. The calculations take into account various factors including local supplies, wholesale supplies, retail supplies, demands, in-lieu deliveries, agricultural deliveries, conservation achieved and conservation rate structures.
- Step 2: Allocation Year Calculations: The next step in calculating the water supply allocation is estimating water needs in the allocation year. This is done by adjusting the base period estimates of retail demand for population or economic growth and changes in local supplies. A number of factors are taken into consideration in this step including: (1) allocation year retail demands; (2) allocation year local supplies; and (3) allocation year wholesale demands.
- Step 3: Supply Allocation Calculations: The final step is calculating the water supply allocation for each member agency based on the allocation year water needs identified in Step 2. Again, several elements are considered at this stage including: (1) regional shortage levels; (2) regional shortage percentages; (3) extraordinary increased production adjustments; (4) wholesale minimum allocations; (5) maximum retail impact adjustments; (6) interim agricultural water program reductions; (7) conservation demand hardening credits; (8) municipal and industrial allocations; and (9) total allocation

The Allocation Plan takes effect when a regional shortage is declared by Metropolitan's Board of Directors. The allocation period covers twelve consecutive months, from July of a given year through the following June (this period was selected to minimize the impacts of varying SWP allocations and to provide member agencies with sufficient time to implement their outreach strategies and rate modifications).

The Allocation Plan also allows for an appeals process to address any changes or corrections to an agency's allocation. Appeals can be made to request adjustments for (1) erroneous historical data used in base period calculations; (2) unforeseen loss or gain in local supply; (3) extraordinary increases in local supply; (4) population growth rates; and (5) reviewing calculation of base period, allocation year and supply allocation figures for consistency with the standards outlined in the Allocation Plan.

The Allocation Plan also allows for enforcement through a penalty rate structure. Penalty rates and charges will only be assessed to the extent that an agency's total annual usage exceeds its total annual allocation. Any funds collected will be applied towards investments in conservation and local resources development within the service area of the member agency by which the penalties are incurred. No billing or assessment of penalty rates will take place until the end of the twelve-month allocation period.

Additional information on Metropolitan's Water Supply Allocation Plan can be found in that document as previously referenced by footnote.

Health and Safety Requirements

The primary goal of the City's water system is to preserve the health and safety of its personnel and the public. Meeting this goal is a continuous function of the system – before, during and after a disaster or water shortage. Fire suppression capabilities will continue to be maintained during any water shortage contingency stage. Some water needs are more immediate than others. The following list of public health needs and the allowable time without potable water is a guideline and will depend on the magnitude of the water shortage:

- Hospitals – continuous need
- Emergency shelters – immediate need
- Kidney dialysis – 24 hours
- Drinking water – 72 hours
- Personal hygiene, waste disposal – 72 hours

Based on commonly accepted estimates of interior residential water use in the United States, Table 8.2-1 indicates per capita health and safety water requirements. During the initial stage of a shortage, customers may adjust either interior and/or outdoor water use to meet the voluntary water reduction goal.

Table 8.2-1
Per Capita Health and Safety Water Quantity Calculations

	Non-Conserving Fixtures		Habit Changes[1]		Conserving Fixtures[2]	
Toilet	5 flushes x 5.5 gpf	27.5	3 flushes x 5.5 gpf	16.5	5 flushes x 1.6 gpf	8.0
Shower	5 min. x 4.0 gpm	20.0	4 min. x 3.0 gpm	12.0	4 min. x 2.5 gpm	10.0
Washer	12.5 gpcd	12.5	11.5 gpcd	11.5	11.5 gpcd	11.5
Kitchen	4 gpcd	4.0	4 gpcd	4.0	4 gpcd	4.0
Other	4 gpcd	4.0	4 gpcd	4.0	4 gpcd	4.0
Total		68.0		48.0		37.5
CCF per capita per year		33.0		23.0		18.0

gpcd = gallons per capita per day
gpf = gallons per flush
gpm = gallons per minute
CCF = hundred cubic feet (approximately 748 gallons)
[1] Reduced shower use results from shorter and reduced flow. Reduced washer use results from fuller loads.
[2] Fixtures include ULF 1.6 gpf toilets, 2.5 gpm showerheads, and efficient clothes washers.

Priority by Use

Conditions prevailing in the City of Huntington Beach area require that available water resources be put to maximum beneficial use to the extent possible. The waste, unreasonable use, or unreasonable method of use, of water should be prevented and water conservation and water use efficiency should be encouraged with a view toward maximizing reasonable and beneficial use thereof in the interests of the people of the City and for the public welfare. Preservation of health and safety will be a top priority for the City.

8.3 ESTIMATE OF MINIMUM SUPPLY FOR NEXT THREE YEARS

Based on their 2010 RUWMP, Metropolitan projects 100 percent reliability for full-service demands through the year 2035. Additionally, through a variety of groundwater reliability programs conducted by OCWD and participated in by the City, local supplies are projected to be maintained at demand levels. The City anticipates the ability to meet water demand through the next three years based on the driest historic three-years as shown in Table 8.3-1. The multiple dry year demand for year 2013 from Table 5.2-3 is only 36,250 AFY and supply is estimated at well over 38,000 AFY as shown below.

Table 8.3-1
Three Year Estimated Minimum Water Supply
(Based on Driest 3-Year Historic Sequence)
(AFY – All projections rounded to nearest 10 AF)

Water Sources	2011	2012	2013	2011	2012	2013
Supply	**Normal Years**			**Dry Years**		
Imported	22,130	22,890	23,660	16,280	16,310	16,330
Local (Groundwater)	20,100	20,130	20,160	22,410	22,440	22,480
Total Supply	**42,230**	**43,020**	**43,820**	**38,690**	**38,750**	**38,810**

Source: Projections are interpolated from data in Tables 5.2-3 and 5.2-5; BPP is assumed to be 62% in 2011-2013.

The City relies on groundwater wells accessing the Orange County Groundwater Basin managed by OCWD and imported water from Metropolitan through MWDOC. Both sources of water are vitally important to the City. MWDOC and OCWD are implementing water supply alternative strategies for the region and on behalf of its member agencies to insure available water in the future and during shortages.

Supplemental water supplies are discussed in Section 4, Water Reliability Planning. Supplies discussed include regionally beneficial programs, including management of water system pressures and peak demands, water exchanges or transfers, conjunctive use programs, recycled water projects and desalination. These options include programs for expanded local supplies. Additional actions to manage limited supplies would include

both operational and demand management measures, encompassing alternative rate structures, distribution of water use efficiency devices, and enhanced school education and public information.

The MWDOC 2010 RUWMP and Metropolitan RUWMP further discusses programs by MWDOC, OCWD and Metropolitan for the benefit of the region and their member agencies, including the City of Huntington Beach.

8.4 CATASTROPHIC SUPPLY INTERRUPTION PLAN

Water Shortage Emergency Response

A water shortage emergency could be the result of a catastrophic event such as result of drought, failures of transmission facilities, a regional power outage, earthquake, flooding, supply contamination from chemical spills, or other adverse conditions. The City maintains and exercises a comprehensive Emergency Management Program for such emergencies including Water Shortage Emergency Response. The Utilities Division of the Public Works Department is responsible for water operations and maintenance as well as implementation of the City's Emergency Management Plan.

The plan describes the organizational and operational policies and procedures required to meet the needs of sufficient water for firefighting operations and safe drinking water and provides a system for organizing and prioritizing water repairs. It also cites authorities and specifies the public and private organizations responsible for providing water service.

The Public Works Department will operate under normal operating procedures until a situation is beyond its control. This includes implementation of any allocation plan passed through by MWDOC for Metropolitan, and water shortage contingency plans of OCWD.

If the situation is beyond the Utilities Division's control, the Division Operations Center (DOC) may be activated to better manage the situation. If the situation warrants, the City Emergency Operations Center (EOC) may be activated at which time a water representative will be sent to the EOC to coordinate water emergency response with all other City department's emergency response. The representative sent to the EOC is called the *Water Tactical Officer.*

In the event the EOC is activated, the City management Policy Group will set priorities. When the EOC is activated, the DOC will take its direction from the EOC. An EOC *Action Plan* will be developed in the EOC that will carry out the policies dictated by the *Policy Group*. The DOC will use the EOC *Action Plan* in determining its course of action. Coordination between the DOC and the EOC will be accomplished by the Utilities Manager (located in the DOC) and the *Water Tactical Officer* (located in the EOC) under the direction of the *Public Works Chief* (located in the EOC).

If the situation is beyond the City's control, additional assistance will be sought through coordination with the Water Emergency Response Organization of Orange County.

Water Emergency Response Organization of Orange County (WEROC)

The City of Huntington Beach Public Works Department actively participates in the Water Emergency Response Organization of Orange County (WEROC). WEROC performs coordination of information and mutual-aid requests among water agencies, and conducts disaster training exercises for the Orange County water community and with Metropolitan.

In 1983, the Orange County water community developed a *Water Supply Emergency Preparedness Plan* to respond effectively to disasters impacting the regional water distribution system. This plan was jointly funded by three regional water agencies: Coastal Municipal Water District, MWDOC, and OCWD, with the support and guidance from the Orange County Water Association (OCWA). The collective efforts of these agencies resulted in the formation of the countywide WEROC, which is unique in its ability to provide a single point of contact for water representation in Orange County during a disaster. The MWDOC 2010 Regional Urban Water Management Plan presents further details of WEROC.

Additional emergency services available to the City of Huntington Beach in the State of California include the Master Mutual Aid Agreement, California Water Agencies Response Network (WARN) and Plan Bulldozer. The Master Mutual Aid Agreement includes all public agencies that have signed the agreement and is planned out of the California Office of Emergency Services. WARN includes all public agencies that have signed the related agreement to provide mutual aid. It is managed by a State Steering Committee. Plan Bulldozer provides mutual aid for construction equipment to any public agency for the initial time of disaster when danger to life and property exists.

8.5 PROHIBITIONS, PENALTIES, AND CONSUMPTION REDUCTION METHODS

As part of the City's Water Management Program, water use regulations are set forth in Chapter 14.16 of the City's Municipal Code, as included in Appendix G. Some of the regulations included apply to fires (fire hydrants), waste (improper fixtures), meters (use and location), violations, drawing into steam boilers, water sales outside of city, and cross-connections protection. Refer to Appendix G for the complete ordinance.

Any violation of the City's Water Management Program, including waste of water and excessive use, is a misdemeanor. In addition to any other remedies the City may have for enforcement, service of water would be discontinued or appropriately limited to any customer who willfully uses water in violation of any provision of the ordinance.

The City of Huntington Beach will follow the allocation plan guidelines of MWDOC who will follow the lead of Metropolitan once an extreme shortage is declared. This allocation plan will be enforced by Metropolitan as set forth in their Water Supply Allocation Plan (WSAP). MWDOC adopted a WSAP in January 2009, to allocate supplies at the retail level. The MWDOC WSAP uses a similar method and approach, when reasonable, to that of Metropolitan's WSAP. However, the MWDOC WSAP remains flexible to use an alternative approach when Metropolitan's method produces a significant unintended result for the MWDOC member agencies. Details of MWDOC's WSAP can be found in Section 5 or their 2010 RUWMP. The MWDOC WSAP follows the guidelines of Metropolitan's WSAP, as required to enforce consumption reductions up to a 50% reduction in water supply. The City would correspondingly implement the levels of its Water Management Program in concert with Metropolitan and MWDOC and impose surcharges or penalties in accordance with its ordinance on excessive use of water.

8.6 REVENUE AND EXPENDITURE IMPACTS AND MEASURES TO OVERCOME THOSE IMPACTS

The City receives water revenue from a commodity charge, a fixed customer charge and a capital surcharge. The rates have been designed to recover the full cost of water service in the commodity charge. Therefore, the cost of purchasing water and producing groundwater would decrease as the usage or sale of water decreases. Should an extreme shortage be declared and a large reduction in water sales occurs for an extended period of time, the Public Works Department would re-examine its water rate structure and monitor projected expenditures. In the event of a 50% reduction in water supply, the City will take action in congruence with MWDOC to ensure adequate consumption reduction methods.

In September 2003, MWDOC partnered with the Orange County Business Council and prepared a report, "*Determining the Value of Water Supply Reliability in Orange County, California.*" The study provides insights into how to value water supply reliability by providing projected estimates of the economic impacts of different water shortages that could result in Orange County. The study does not assess the likelihood of different disruptions to water supply, but instead estimates the economic impacts of the resulting water shortages if a particular supply interruption occurs. Two types of shortages were examined in the study – short-term emergency disruptions and multiple-year droughts. A range of scenarios was examined for both situations. Those scenarios were:

- Emergency Disruptions: Water supply reductions of 20%, 40%, 60% and 80% for 10, 20, 30, and 60 days.
- Drought: Water supply reductions of 5% and 20% for one, two, and three years.

The estimated economic impacts are separated into business impacts and residential impacts. Residential users are often required to reduce their water usage more than business customers during water shortages to help preserve the economic base of the

area. In addition to residential and business impacts, this report also included an estimate of the value of landscape losses that would be expected during droughts, and a discussion of the impact of emergency outages on damages from firestorms due to a lack of water supply for firefighting.

The study produced dollar estimates of economic impacts of given water shortages to both the business and residential sectors of three regions within Orange County. The water shortage scenarios analyzed included both short-term emergency disruptions (10 to 60 days in duration) and multiple-year drought situations (1 to 3 years). The three regions of the County analyzed were defined based on the availability of local supplies and the potential risk of supply reliability impacts.

The results revealed that business impacts are larger than residential impacts. For short-term, emergency disruptions, the difference between business impacts and residential impacts varied depending on the magnitude and length of a shortage. For an 80% water loss in South Orange County for 60 days, business impacts are approximately five times as large as residential impacts. For a 20% water loss in the Basin, business impacts are approximately ten times as large as resident impacts. At low levels of water disruption, resident impacts more closely approximate business impacts. For example, the residential impacts from a 20% water loss for 10 days in South Orange County are about 75% of the business impacts from the same disruption.

For all of Orange County during an emergency outage that causes a 20% water supply shortfall and lasts from 10 to 60 days, the economic impacts range from $0.4 to $3 billion. Employment losses were estimated at 3,000 to 23,000 over the 10 to 60 days. For all of Orange County during a drought that results in a 5% shortage to the Basin area and 20% shortage outside the basin area for a 1 to 3 year period, the economic impacts range from $15 to $43 billion. Employment losses were estimated at 75,000 to 225,000 over the one to three-year period.

If shortages were to occur:

- South Orange County would experience approximately 12% of the business and employment impacts, but 25% of the residential and landscape losses. South Orange County has a higher dependence on imported water supplies and hence is more vulnerable to supply outages.
- The Orange County Basin would experience 84% of the business impacts and 71% of the residential and landscape losses, but has a significant supply of water available from the groundwater basin and hence is somewhat insulated from imported water supply emergency disruptions.
- Brea/La Habra area would experience about 3% of all impacts.

Drought scenarios generally cause a higher level of impact than do emergency outages and exceed all but the worst-case emergency disruptions. The exception is a 60-day, 60% reduction in water supplies to the Basin business sector, which would exceed the impact

of a year-long 5% drought in the Basin. (20% reduction in imported supply assuming a 70% BPP.) In most scenarios, about half of the business losses are in the manufacturing and service sectors. Employment losses are highest in services and retail throughout the County.

The study provides extensive insight into the City's water reliability and water shortage contingency plan for planning for the future. The study also demonstrates the extensive importance to the City's water reliability and water shortage contingency plan for planning for the future. If such impacts occur in the residential and business community, the municipal community will be impacted correspondingly. Economic impacts to the community create economic impacts to the City revenue from water sales, among other City revenue sources. The City must and will continue to be diligent in maintaining appropriate water rates and rate structure, and making reasonable adjustments as justified; maintaining sufficient water reserve funds; and managing expenses accordingly.

8.7 WATER SHORTAGE CONTINGENCY ORDINANCE

In 1991, the City of Huntington Beach adopted by ordinance a comprehensive Water Management Program based upon the need to conserve water supplies and to avoid or minimize the effects of future shortage. A copy of the City's Water Management Program Ordinance, Chapter 14.18 of the City Municipal Code, is included as Appendix G. Chapter 14.16 of the Municipal Code also establishes overall Water Use Regulations, including regulations for water meters. In addition, the City's Water Efficient Landscaping Ordinance, Chapter 14.52 of the City's Municipal Code is also included in Appendix G.

8.8 MECHANISMS TO DETERMINE REDUCTIONS IN WATER USE

Under normal conditions, potable water production figures are recorded daily. Weekly and monthly reports are prepared and monitored. This data will be used to measure the effectiveness of any water shortage contingency stage that may be implemented.

As stages of water shortage are declared by Metropolitan and MWDOC, the City of Huntington Beach will follow implementation of those stages and continue to monitor water demand levels. It is not until Shortage Stage 5 that Metropolitan may call for extraordinary conservation. During this stage, Metropolitan's Drought Program Officer will coordinate public information activities with MWDOC and monitor the effectiveness of ongoing conservation programs. Monthly reporting on estimated conservation water savings will be provided.

The City will participate in monthly member agency manager meetings with both MWDOC and OCWD to monitor and discuss monthly water allocation charts. This will enable the City to be aware of import water use on a timely basis as a result of specific actions taken responding to the City's Water Shortage Contingency Plan.

During Metropolitan's fiscal year 2009-10 and 2010-11 a Level 2 WSAP has been in effect, which in essence called for reduction levels of 15 percent in water use by its member agencies. Metropolitan's fiscal year commences July 1 and ends June 30. These allocations were passed on by MWDOC and during fiscal year 2009-10 the City reduced its demand by 6.9% from FY 08-09 and based on the first half of fiscal year 2010-11 is on track for an additional 5% reduction from 2009-10. Therefore, the City has responded favorably to these allocation requirements indicating that they are effective in making water supplies last during extended drought periods.

9 WATER RECYCLING/URBAN RUNOFF

9.1 RECYCLED WATER IN SOUTHERN CALIFORNIA

The Southern California region, from Ventura to San Diego, discharges over 1 billion gallons (1.1 million AFY) of treated wastewater to the ocean each day. These discharges represent a potentially reliable and drought-proof water source, which if treated appropriately and utilized for irrigation and other purposes, could greatly reduce the region's and the City's reliance on imported water. As technological improvements continue to reduce treatment costs, and as public perception and acceptance continue to improve, numerous reuse opportunities may surface in the coming years. Recycled water is already a critical component of the California water picture and should continue to be so in future years because it is not subject to drought induced cutbacks.

9.2 COORDINATION OF RECYCLED WATER IN THE CITY SERVICE AREA

Currently, the City does not utilize or serve directly applied recycled water to any of its customers or for municipal purposes. However, the City does receive a partial credit for recycled water produced by the joint OCWD/OCSD Groundwater Replenishment System (GWRS) from wastewater generated within the City of Huntington Beach.

As previously noted, the City produces a majority of its water supply from the Orange County Groundwater Basin (Basin). In addition to the GWRS recycled water credit, OCWD also utilizes recycled water generated from Orange County Sanitation District's (OCSD) treatment facilities to protect the Basin through the operation of seawater intrusion barriers and groundwater recharge basins. The City, therefore, indirectly benefits from this regional use of recycled water. The regional projects are discussed later in this section.

9.3 COLORED WATER (WELL NO. 8)

While not technically a recycled water project, the City is investigating the possibility of utilizing Well No. 8 water, which was removed from service as a potable water supply due to water quality issues, as a source of irrigation water. This project is currently in the City's FY 2010/11 Capital Improvement Program (CIP), including modification of the wellhead and installation of various improvements to enable it to be used for irrigation of multiple City-owned parks, including Central Park along Goldenwest Street. This is not technically a new source of supply since it will count towards the City's BPP as far as OCWD is concerned. However, as the utilization of Well No. 8 is increased, the poorer water quality water should be replaced with higher quality groundwater resulting in improved water quality in this area of the Basin. This additional source also increases the reliability of the City's supply.

9.4 URBAN RUNOFF (TALBERT LAKE DIVERSION PROJECT)

The capture of urban runoff and reuse is another source of water supply currently being investigated by the City to provide added supply reliability. The Talbert Lake Diversion Project is a Santa Ana Regional Water Quality Control Board-approved Supplemental Environmental Project (SEP) involving the construction of a natural treatment system in the northeastern corner of Central Park in Huntington Beach, on the eastern side of Goldenwest Street. The proposed project would divert up to 3 million gallons per day (mgd) of dry weather flows from the East Garden Grove Wintersburg Channel (EGGWC) into a newly constructed treatment wetlands system for water quality improvement purposes. Project components include the construction of a diversion structure such as a rubber dam within the EGGWC to divert dry weather flows either into an existing water line in Goldenwest Street, or the existing storm drain system within Gothard Street, for transport to the newly constructed treatment wetlands within Central Park. This water would then be pumped out of the lake maintaining it at the appropriate water level and utilized to irrigate parks and landscaping along Goldenwest Street.

The Talbert Lake Diversion Project is currently in the City's FY 2010/11 Capital Improvement Program (CIP). Design of project is essentially complete at this point, and the City is in the process of procuring funding for construction of this project. The project would provide a variety of benefits to the environment and public at large, including protection of the beneficial uses of coastal waters; creation and enhancement of environmental habitats; educational awareness; potential groundwater recharge; potential seawater barrier enhancements; enhanced recreational experiences; and an additional year-round irrigation supply helping preserve the City's potable water supply.

9.5 WASTEWATER COLLECTION AND TREATMENT IN THE CITY SERVICE AREA

Wastewater from the City's water service area is collected and treated by OCSD. The City operates and maintains the localized sewer collection pipelines that feed into OCSD's trunk sewer system. The City of Huntington Beach sewer system includes approximately 385 miles of sewer lines, 10,000 manholes and 28 lift stations. OCSD operates the third largest wastewater system on the west coast, consisting of nearly 600 miles of trunk sewers and 200 miles of subtrunk sewers, two regional treatment plants, and an ocean disposal system. The OCSD sewerage system collects wastewater through an extensive system of gravity flow sewers, pump stations, and pressurized sewers (force mains). The sewer system consists of 12 trunk sewer systems ranging in size from 12 to 96 inches in diameter.

Orange County Sanitation Districts (OCSD) Treatment Plants

As previously noted, OCSD's Reclamation Plant No. 1 is located in the City of Fountain Valley about 4 miles northeast of the ocean, adjacent to the Santa Ana River. The plant provides advanced primary and secondary treatment and supplies secondary treatment

water to OCWD which further treats and distributes the water for various uses, including irrigation, groundwater recharge, and operation of coastal seawater barrier system.

The treatment process at Reclamation Plant No. 1 includes secondary treatment through an activated sludge system. This plant receives raw wastewater from six major sewer pipes, often called "interceptors" or "trunk lines." The secondary effluent is either blended with the advanced primary effluent and routed to the ocean disposal system, or is sent to the OCWD facilities for advanced treatment and recycling at the GWRS Treatment Plant. The solid materials removed in the treatment systems are processed in large tanks to facilitate natural decomposition. Half of the material is converted to methane, which is burned as fuel in the energy recovery system, and the remaining solids are used as a soil amendment or fertilizer for agricultural crops.

OCSD's Treatment Plant No. 2 is located in the City of Huntington Beach adjacent to the Santa Ana River and about 1,500 feet from the ocean. This plant provides a mix of advanced primary and secondary treatment. The plant receives raw wastewater through five major sewers. The treatment process is similar to Plant No. 1. Approximately 33 percent of the influent receives secondary treatment through an activated sludge system, and all of the effluent is discharged to the ocean disposal system.

The portion of OCSD's treated wastewater that is not recycled or used for seawater intrusion protection is discharged through a 120-inch outfall at a depth of approximately 200 feet below sea level and nearly five miles offshore from the Santa Ana River. Its high tide hydraulic capacity is 480 mgd. A 78-inch standby outfall, stretching approximately one mile from shore, is used for emergency purposes.

Current capacity for Reclamation Plant No. 1 is 218 million gallons per day (mgd) of wastewater, with an average daily flow of 120 mgd. Current capacity for Plant No. 2 is 168 mgd of wastewater, with an average flow of 144 mgd.[70] The City provides significant amount of wastewater to OCSD's plants. The quantities of wastewater generated are generally proportional to the population and the water use in the service area.

Wastewater flows generated within the City of Huntington Beach are currently estimated at between 24,000 and 26,000 AFY by OCSD.[71] However, due to the economy and water conservation, these figures are believed to be over estimated.

Wastewater flows are generally proportional to water usage, which means that as per capita water usage declines over past usage figures, wastewater flows will also decline somewhat, but with some minimal increase due to population increases as referenced in Section 1 of this UWMP.

[70] MWDOC 2010 Regional Urban Water Management Plan.

[71] Calculated by using unit flow coefficient for 2010 extracted from Tables 3.1 and 3.5 in the OCSD Collection System Model and Strategic Plan Update, April 2006, prepared by MWH; report is available on OCSD website at: http://www.ocsd.com/pdfs/Collection%20System%20Model%20and%20Strategic%20Plan%20Updated.pdf

9.6 REGIONAL RECYCLED WATER

Since Huntington Beach depends on groundwater for at least 62 percent of its total water supply, the City supports the efforts of the regional water management agencies to utilize recycled water in Orange County. Recycled water is used to protect the Orange County Groundwater Basin through recharge and prevention of saltwater intrusion. Recycled water in Orange County is also used to irrigate crops, golf courses, parks, schools, business landscapes, residential lawns, as well as for some industrial uses thus offsetting potable water demands. In the 2007-08 water year, almost 36,000 AFY of recycled water was applied by water retailers in the County.[72] This amount does not include recycled water of up to 72,000 AFY which is currently being produced by GWRS. The regional projects planned or currently used to provide recycled water are discussed in the following sections.

Green Acres Project (GAP)

OCSD produces recycled water year round for OCWD's Green Acres Project (GAP), providing recycled water for industrial customers and landscape irrigation in the cities of Santa Ana, Fountain Valley, Costa Mesa, and Newport Beach. The GAP has the capacity to treat and distribute up to 7.5 mgd of recycled water. At one time, GAP served a single customer (the County of Orange) within the City of Huntington Beach, but that service is no longer active and there are no plans to serve the City in the near future.

Water Factory 21

As previously noted, Water Factory 21 was taken off-line in 2004 due to the pending construction of the GWRS Plant. Water Factory 21 had been used by OCWD for almost 30 years prior to that time to produce recycled water for injection into the groundwater basin to protect against seawater intrusion. Water Factory 21 purified approximately 4 mgd of recycled water and deep well water. This blended water supplied a hydraulic barrier system that consisted of a series of injection wells, located approximately four miles inland, to produce a fresh water mound within the groundwater aquifer to block further inland intrusion of seawater.

OCWD/OCSD Groundwater Replenishment System (GWRS)

Groundwater basin recharge is the single largest use of recycled water in Orange County. As previously noted, the GWRS project was placed into operation in 2008 to help address that need. GWRS is a water supply project designed to ultimately reuse approximately 130,000 AFY of advanced treated wastewater. The GWRS Plant currently produces up to 72,000 AFY. Plant expansion, providing the ability to produce 101,000 AFY is currently under design.

[72] Per the Center for Demographic Research, Cal State Fullerton, March 2009 Profile entitled Water Use in Orange County, available here: http://www.fullerton.edu/cdr/profilesv14n1.pdf

The GWRS project provides a new source of reliable, high quality, low salinity water to replenish the Basin and expand the existing seawater intrusion barrier. The GWRS supplements existing water supplies, and provides a new, cost-effective and reliable source of water to recharge the Basin, protect the Basin from further degradation due to seawater intrusion, and augment the supply of recycled water for irrigation and industrial use.

The GWRS is comprised of three major components: (1) Advanced Water Purification Facilities (AWPF) and pumping stations; (2) a major pipeline connecting the treatment facilities to existing recharge basins; and (3) expansion of an existing seawater intrusion barrier. The GWRS takes secondary, treated municipal wastewater from the OCSD Treatment Plant No. 1 in Fountain Valley and further cleans this water to levels that exceed current drinking water standards. A portion of the treated product water is then pumped upstream via a major conveyance pipeline generally paralleling the Santa Ana River to the OCWD spreading basins where it is allowed to percolate into the Orange County Groundwater Basin. The treated water is also be injected into the ground to create an expanded seawater intrusion barrier.

9.7 POTENTIAL USES OF RECYCLED WATER

While the City recognizes the potential uses of recycled water in its community, such as landscape irrigation, parks, industrial and other uses, the OCWD does not have the recycled water infrastructure at this time to support the direct use of recycled water in Huntington Beach. Initial development in Huntington Beach generally began in the 1950s and the community is essentially built-out at this time. Various analyses to determine the cost-effectiveness of constructing recycled water infrastructure have been conducted over the years, but none have been show to be beneficial. That being the case, the City has instead opted to support, encourage and contribute to the continued development of recycled water and potential uses throughout the region through such projects as GWRS.

9.8 PROJECTED AND POTENTIAL USES OF RECYCLED WATER

The City's 2000 UWMP projected that by 2005 recycled water from OCWD's Green Acres Project would be available to the City of Huntington Beach for irrigation use. The infrastructure required to implement that use has not yet been constructed and it is not anticipated that such infrastructure will be in place in the near future. Therefore, the City does not project any recycled water use for subsequent years, and currently does not utilize or serve directly applied recycled water to any of its customers or for municipal uses.

9.9 ENCOURAGING RECYCLED WATER USE

Studies of water recycling opportunities within southern California provide a context for promoting the development of water recycling plans. It is recognized that broad public acceptance of recycled water requires continued education and public involvement.

However, planning for most of the recycled water available is being directed toward replenishment of the Basin and improvements in groundwater quality. As a user of groundwater, the City supports the efforts of OCWD and OCSD to utilize recycled water as a primary resource for groundwater recharge in Orange County.

Public Education

The City continues to participate in MWDOC's public education and school education programs, which include extensive learning programs on water recycling. MWDOC's water use efficiency public information programs are a partnership with agencies throughout the county.

MWDOC staff reaches out to area residents including those in the City, through a variety of public information programs. These programs include information on present and future water supplies, demands for a suitable quantity and quality of water, including recycled water, and the importance of implementing water efficient techniques and behaviors. Through MWDOC, water education programs have reached thousands of students with grade-specific programs that include information on recycled water. Between October 2009 and April 2010, school education presentations were made at 19 public and private schools in Huntington Beach. These programs were attended by over 7,300 students. Programs scheduled at City schools during the 2010-11 academic year, will reach out to an additional 8,000 students.[73]

Financial Incentives

The implementation of recycled water projects involves a substantial upfront capital investment for planning studies, environmental impact reports, engineering design and construction before there is any recycled water to market. For some water agencies, these capital costs exceed the short-term expense of purchasing additional imported water supplies from Metropolitan.

The establishment of new supplemental funding sources through federal, state and regional programs now provide significant financial incentives for local agencies to develop and make use of recycled water. Potential sources of funding include federal, state and local funding opportunities. These funding sources include the USBR, California Proposition 13 Water Bond, and Metropolitan's Local Resources Program. These funding opportunities may be sought by the City or possibly more appropriately by regional agencies. The City will continue to support seeking funding for regional water recycling projects and programs.

9.10 OPTIMIZING RECYCLED WATER USE

In Orange County, the majority of recycled water is used for recharging the Basin, irrigating golf courses, parks, schools, business and communal landscaping. However, future recycled water use can increase by requiring dual piping in new developments,

[73] Information on MWDOC's school education program including specific data on schools within Huntington beach can be accessed at: http://www.mwdoc.com/services/school-programs

retrofitting existing landscaped areas and constructing recycled water pumping stations and transmission mains to reach areas far from the treatment plants. Gains in implementing some of these projects have been made throughout the county; however, the additional costs, large energy requirements and required infrastructure, make such projects very expensive to pursue.

To optimize the use of recycled water, cost/benefit analysis must be conducted for each potential project. Once again, this brings discussion about the technical and economic feasibility of a recycled water project, which in turn, requires a relative comparison to alternative water supply options. For the City, analysis has shown capital costs exceed the short-term expense of purchasing additional imported water supplies from Metropolitan. Except for some possible future limited irrigation expansion, it is not anticipated that direct reuse projects will be pursued by the City.

The City will continue to conduct cost/benefit analysis when feasible for recycled water projects, and seek creative solutions and a balance to recycled water use, in coordination with OCWD, Metropolitan and other cooperative agencies. These include solutions for funding, regulatory requirements, institutional arrangements and public acceptance.

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APPENDICES

Appendix A

Urban Water Management Plan Act
as Amended with SBX7-7

CALIFORNIA WATER CODE DIVISION 6
PART 2.6. URBAN WATER MANAGEMENT PLANNING

All California Codes have been updated to include the 2010 Statutes.

WATER CODE
SECTION 10610-10610.4

10610. This part shall be known and may be cited as the "Urban Water Management Planning Act."

10610.2. (a) The Legislature finds and declares all of the following:

(1) The waters of the state are a limited and renewable resource subject to ever-increasing demands.

(2) The conservation and efficient use of urban water supplies are of statewide concern; however, the planning for that use and the implementation of those plans can best be accomplished at the local level.

(3) A long-term, reliable supply of water is essential to protect the productivity of California's businesses and economic climate.

(4) As part of its long-range planning activities, every urban water supplier should make every effort to ensure the appropriate level of reliability in its water service sufficient to meet the needs of its various categories of customers during normal, dry, and multiple dry water years.

(5) Public health issues have been raised over a number of contaminants that have been identified in certain local and imported water supplies.

(6) Implementing effective water management strategies, including groundwater storage projects and recycled water projects, may require specific water quality and salinity targets for meeting groundwater basins water quality objectives and promoting beneficial use of recycled water.

(7) Water quality regulations are becoming an increasingly important factor in water agencies' selection of raw water sources, treatment alternatives, and modifications to existing treatment facilities.

(8) Changes in drinking water quality standards may also impact the usefulness of water supplies and may ultimately impact supply reliability.

(9) The quality of source supplies can have a significant impact

on water management strategies and supply reliability.
(b) This part is intended to provide assistance to water agencies in carrying out their long-term resource planning responsibilities to ensure adequate water supplies to meet existing and future demands for water.

10610.4. The Legislature finds and declares that it is the policy of the state as follows:
(a) The management of urban water demands and efficient use of water shall be actively pursued to protect both the people of the state and their water resources.
(b) The management of urban water demands and efficient use of urban water supplies shall be a guiding criterion in public decisions.
(c) Urban water suppliers shall be required to develop water management plans to actively pursue the efficient use of available supplies.

WATER CODE
SECTION 10611-10617

10611. Unless the context otherwise requires, the definitions of this chapter govern the construction of this part.

10611.5. "Demand management" means those water conservation measures, programs, and incentives that prevent the waste of water and promote the reasonable and efficient use and reuse of available supplies.

10612. "Customer" means a purchaser of water from a water supplier who uses the water for municipal purposes, including residential, commercial, governmental, and industrial uses.

10613. "Efficient use" means those management measures that result in the most effective use of water so as to prevent its waste or unreasonable use or unreasonable method of use.

10614. "Person" means any individual, firm, association, organization, partnership, business, trust, corporation, company, public agency, or any agency of such an entity.

10615. "Plan" means an urban water management plan prepared pursuant to this part. A plan shall describe and evaluate sources of supply, reasonable and practical efficient uses, reclamation and demand management activities. The components of the plan may vary according to an individual community or area's characteristics and its capabilities to efficiently use and conserve water. The plan shall address measures for residential, commercial, governmental, and industrial water demand management as set forth in Article 2 (commencing with Section 10630) of Chapter 3. In addition, a strategy and time schedule for implementation shall be included in the plan.

10616. "Public agency" means any board, commission, county, city

and county, city, regional agency, district, or other public entity.

10616.5. "Recycled water" means the reclamation and reuse of wastewater for beneficial use.

10617. "Urban water supplier" means a supplier, either publicly or privately owned, providing water for municipal purposes either directly or indirectly to more than 3,000 customers or supplying more than 3,000 acre-feet of water annually. An urban water supplier includes a supplier or contractor for water, regardless of the basis of right, which distributes or sells for ultimate resale to customers. This part applies only to water supplied from public water systems subject to Chapter 4 (commencing with Section 116275) of Part 12 of Division 104 of the Health and Safety Code.

WATER CODE
SECTION 10620-10621

10620. (a) Every urban water supplier shall prepare and adopt an urban water management plan in the manner set forth in Article 3 (commencing with Section 10640).

(b) Every person that becomes an urban water supplier shall adopt an urban water management plan within one year after it has become an urban water supplier.

(c) An urban water supplier indirectly providing water shall not include planning elements in its water management plan as provided in Article 2 (commencing with Section 10630) that would be applicable to urban water suppliers or public agencies directly providing water, or to their customers, without the consent of those suppliers or public agencies.

(d) (1) An urban water supplier may satisfy the requirements of this part by participation in areawide, regional, watershed, or basinwide urban water management planning where those plans will reduce preparation costs and contribute to the achievement of conservation and efficient water use.

(2) Each urban water supplier shall coordinate the preparation of its plan with other appropriate agencies in the area, including other water suppliers that share a common source, water management agencies, and relevant public agencies, to the extent practicable.

(e) The urban water supplier may prepare the plan with its own staff, by contract, or in cooperation with other governmental agencies.

(f) An urban water supplier shall describe in the plan water management tools and options used by that entity that will maximize resources and minimize the need to import water from other regions.

10621. (a) Each urban water supplier shall update its plan at least once every five years on or before December 31, in years ending in five and zero.

(b) Every urban water supplier required to prepare a plan pursuant to this part shall, at least 60 days prior to the public hearing on the plan required by Section 10642, notify any city or county within which the supplier provides water supplies that the urban water

supplier will be reviewing the plan and considering amendments or changes to the plan. The urban water supplier may consult with, and obtain comments from, any city or county that receives notice pursuant to this subdivision.

(c) The amendments to, or changes in, the plan shall be adopted and filed in the manner set forth in Article 3 (commencing with Section 10640).

WATER CODE
SECTION 10630-10634

10630. It is the intention of the Legislature, in enacting this part, to permit levels of water management planning commensurate with the numbers of customers served and the volume of water supplied.

10631. A plan shall be adopted in accordance with this chapter that shall do all of the following:

(a) Describe the service area of the supplier, including current and projected population, climate, and other demographic factors affecting the supplier's water management planning. The projected population estimates shall be based upon data from the state, regional, or local service agency population projections within the service area of the urban water supplier and shall be in five-year increments to 20 years or as far as data is available.

(b) Identify and quantify, to the extent practicable, the existing and planned sources of water available to the supplier over the same five-year increments described in subdivision (a). If groundwater is identified as an existing or planned source of water available to the supplier, all of the following information shall be included in the plan:

(1) A copy of any groundwater management plan adopted by the urban water supplier, including plans adopted pursuant to Part 2.75 (commencing with Section 10750), or any other specific authorization for groundwater management.

(2) A description of any groundwater basin or basins from which the urban water supplier pumps groundwater. For those basins for which a court or the board has adjudicated the rights to pump groundwater, a copy of the order or decree adopted by the court or the board and a description of the amount of groundwater the urban water supplier has the legal right to pump under the order or decree. For basins that have not been adjudicated, information as to whether the department has identified the basin or basins as overdrafted or has projected that the basin will become overdrafted if present management conditions continue, in the most current official departmental bulletin that characterizes the condition of the groundwater basin, and a detailed description of the efforts being undertaken by the urban water supplier to eliminate the long-term overdraft condition.

(3) A detailed description and analysis of the location, amount, and sufficiency of groundwater pumped by the urban water supplier for the past five years. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historic use records.

(4) A detailed description and analysis of the amount and location of groundwater that is projected to be pumped by the urban water supplier. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historic use records.

(c) (1) Describe the reliability of the water supply and vulnerability to seasonal or climatic shortage, to the extent practicable, and provide data for each of the following:

(A) An average water year.

(B) A single dry water year.

(C) Multiple dry water years.

(2) For any water source that may not be available at a consistent level of use, given specific legal, environmental, water quality, or climatic factors, describe plans to supplement or replace that source with alternative sources or water demand management measures, to the extent practicable.

(d) Describe the opportunities for exchanges or transfers of water on a short-term or long-term basis.

(e) (1) Quantify, to the extent records are available, past and current water use, over the same five-year increments described in subdivision (a), and projected water use, identifying the uses among water use sectors, including, but not necessarily limited to, all of the following uses:

(A) Single-family residential.

(B) Multifamily.

(C) Commercial.

(D) Industrial.

(E) Institutional and governmental.

(F) Landscape.

(G) Sales to other agencies.

(H) Saline water intrusion barriers, groundwater recharge, or conjunctive use, or any combination thereof.

(I) Agricultural.

(2) The water use projections shall be in the same five-year increments described in subdivision (a).

(f) Provide a description of the supplier's water demand management measures. This description shall include all of the following:

(1) A description of each water demand management measure that is currently being implemented, or scheduled for implementation, including the steps necessary to implement any proposed measures, including, but not limited to, all of the following:

(A) Water survey programs for single-family residential and multifamily residential customers.

(B) Residential plumbing retrofit.

(C) System water audits, leak detection, and repair.

(D) Metering with commodity rates for all new connections and retrofit of existing connections.

(E) Large landscape conservation programs and incentives.

(F) High-efficiency washing machine rebate programs.

(G) Public information programs.

(H) School education programs.

(I) Conservation programs for commercial, industrial, and institutional accounts.

(J) Wholesale agency programs.
(K) Conservation pricing.
(L) Water conservation coordinator.
(M) Water waste prohibition.
(N) Residential ultra-low-flush toilet replacement programs.
(2) A schedule of implementation for all water demand management measures proposed or described in the plan.
(3) A description of the methods, if any, that the supplier will use to evaluate the effectiveness of water demand management measures implemented or described under the plan.
(4) An estimate, if available, of existing conservation savings on water use within the supplier's service area, and the effect of the savings on the supplier's ability to further reduce demand.
(g) An evaluation of each water demand management measure listed in paragraph (1) of subdivision (f) that is not currently being implemented or scheduled for implementation. In the course of the evaluation, first consideration shall be given to water demand management measures, or combination of measures, that offer lower incremental costs than expanded or additional water supplies. This evaluation shall do all of the following:
(1) Take into account economic and noneconomic factors, including environmental, social, health, customer impact, and technological factors.
(2) Include a cost-benefit analysis, identifying total benefits and total costs.
(3) Include a description of funding available to implement any planned water supply project that would provide water at a higher unit cost.
(4) Include a description of the water supplier's legal authority to implement the measure and efforts to work with other relevant agencies to ensure the implementation of the measure and to share the cost of implementation.
(h) Include a description of all water supply projects and water supply programs that may be undertaken by the urban water supplier to meet the total projected water use as established pursuant to subdivision (a) of Section 10635. The urban water supplier shall include a detailed description of expected future projects and programs, other than the demand management programs identified pursuant to paragraph (1) of subdivision (f), that the urban water supplier may implement to increase the amount of the water supply available to the urban water supplier in average, single-dry, and multiple-dry water years. The description shall identify specific projects and include a description of the increase in water supply that is expected to be available from each project. The description shall include an estimate with regard to the implementation timeline for each project or program.
(i) Describe the opportunities for development of desalinated water, including, but not limited to, ocean water, brackish water, and groundwater, as a long-term supply.
(j) For purposes of this part, urban water suppliers that are members of the California Urban Water Conservation Council shall be deemed in compliance with the requirements of subdivisions (f) and (g) by complying with all the provisions of the "Memorandum of Understanding Regarding Urban Water Conservation in California,"

dated December 10, 2008, as it may be amended, and by submitting the annual reports required by Section 6.2 of that memorandum.

(k) Urban water suppliers that rely upon a wholesale agency for a source of water shall provide the wholesale agency with water use projections from that agency for that source of water in five-year increments to 20 years or as far as data is available. The wholesale agency shall provide information to the urban water supplier for inclusion in the urban water supplier's plan that identifies and quantifies, to the extent practicable, the existing and planned sources of water as required by subdivision (b), available from the wholesale agency to the urban water supplier over the same five-year increments, and during various water-year types in accordance with subdivision (c). An urban water supplier may rely upon water supply information provided by the wholesale agency in fulfilling the plan informational requirements of subdivisions (b) and (c).

10631.1. (a) The water use projections required by Section 10631 shall include projected water use for single-family and multifamily residential housing needed for lower income households, as defined in Section 50079.5 of the Health and Safety Code, as identified in the housing element of any city, county, or city and county in the service area of the supplier.

(b) It is the intent of the Legislature that the identification of projected water use for single-family and multifamily residential housing for lower income households will assist a supplier in complying with the requirement under Section 65589.7 of the Government Code to grant a priority for the provision of service to housing units affordable to lower income households.

10631.5. (a) (1) Beginning January 1, 2009, the terms of, and eligibility for, a water management grant or loan made to an urban water supplier and awarded or administered by the department, state board, or California Bay-Delta Authority or its successor agency shall be conditioned on the implementation of the water demand management measures described in Section 10631, as determined by the department pursuant to subdivision (b).

(2) For the purposes of this section, water management grants and loans include funding for programs and projects for surface water or groundwater storage, recycling, desalination, water conservation, water supply reliability, and water supply augmentation. This section does not apply to water management projects funded by the federal American Recovery and Reinvestment Act of 2009 (Public Law 111-5).

(3) Notwithstanding paragraph (1), the department shall determine that an urban water supplier is eligible for a water management grant or loan even though the supplier is not implementing all of the water demand management measures described in Section 10631, if the urban water supplier has submitted to the department for approval a schedule, financing plan, and budget, to be included in the grant or loan agreement, for implementation of the water demand management measures. The supplier may request grant or loan funds to implement the water demand management measures to the extent the request is consistent with the eligibility requirements applicable to the water management funds.

(4) (A) Notwithstanding paragraph (1), the department shall

determine that an urban water supplier is eligible for a water management grant or loan even though the supplier is not implementing all of the water demand management measures described in Section 10631, if an urban water supplier submits to the department for approval documentation demonstrating that a water demand management measure is not locally cost effective. If the department determines that the documentation submitted by the urban water supplier fails to demonstrate that a water demand management measure is not locally cost effective, the department shall notify the urban water supplier and the agency administering the grant or loan program within 120 days that the documentation does not satisfy the requirements for an exemption, and include in that notification a detailed statement to support the determination.

(B) For purposes of this paragraph, "not locally cost effective" means that the present value of the local benefits of implementing a water demand management measure is less than the present value of the local costs of implementing that measure.

(b) (1) The department, in consultation with the state board and the California Bay-Delta Authority or its successor agency, and after soliciting public comment regarding eligibility requirements, shall develop eligibility requirements to implement the requirement of paragraph (1) of subdivision (a). In establishing these eligibility requirements, the department shall do both of the following:

(A) Consider the conservation measures described in the Memorandum of Understanding Regarding Urban Water Conservation in California, and alternative conservation approaches that provide equal or greater water savings.

(B) Recognize the different legal, technical, fiscal, and practical roles and responsibilities of wholesale water suppliers and retail water suppliers.

(2) (A) For the purposes of this section, the department shall determine whether an urban water supplier is implementing all of the water demand management measures described in Section 10631 based on either, or a combination, of the following:

(i) Compliance on an individual basis.

(ii) Compliance on a regional basis. Regional compliance shall require participation in a regional conservation program consisting of two or more urban water suppliers that achieves the level of conservation or water efficiency savings equivalent to the amount of conservation or savings achieved if each of the participating urban water suppliers implemented the water demand management measures. The urban water supplier administering the regional program shall provide participating urban water suppliers and the department with data to demonstrate that the regional program is consistent with this clause. The department shall review the data to determine whether the urban water suppliers in the regional program are meeting the eligibility requirements.

(B) The department may require additional information for any determination pursuant to this section.

(3) The department shall not deny eligibility to an urban water supplier in compliance with the requirements of this section that is participating in a multiagency water project, or an integrated regional water management plan, developed pursuant to Section 75026 of the Public Resources Code, solely on the basis that one or more of

the agencies participating in the project or plan is not implementing all of the water demand management measures described in Section 10631.

(c) In establishing guidelines pursuant to the specific funding authorization for any water management grant or loan program subject to this section, the agency administering the grant or loan program shall include in the guidelines the eligibility requirements developed by the department pursuant to subdivision (b).

(d) Upon receipt of a water management grant or loan application by an agency administering a grant and loan program subject to this section, the agency shall request an eligibility determination from the department with respect to the requirements of this section. The department shall respond to the request within 60 days of the request.

(e) The urban water supplier may submit to the department copies of its annual reports and other relevant documents to assist the department in determining whether the urban water supplier is implementing or scheduling the implementation of water demand management activities. In addition, for urban water suppliers that are signatories to the Memorandum of Understanding Regarding Urban Water Conservation in California and submit biennial reports to the California Urban Water Conservation Council in accordance with the memorandum, the department may use these reports to assist in tracking the implementation of water demand management measures.

(f) This section shall remain in effect only until July 1, 2016, and as of that date is repealed, unless a later enacted statute, that is enacted before July 1, 2016, deletes or extends that date.

10631.7. The department, in consultation with the California Urban Water Conservation Council, shall convene an independent technical panel to provide information and recommendations to the department and the Legislature on new demand management measures, technologies, and approaches. The panel shall consist of no more than seven members, who shall be selected by the department to reflect a balanced representation of experts. The panel shall have at least one, but no more than two, representatives from each of the following: retail water suppliers, environmental organizations, the business community, wholesale water suppliers, and academia. The panel shall be convened by January 1, 2009, and shall report to the Legislature no later than January 1, 2010, and every five years thereafter. The department shall review the panel report and include in the final report to the Legislature the department's recommendations and comments regarding the panel process and the panel's recommendations.

10632. (a) The plan shall provide an urban water shortage contingency analysis that includes each of the following elements that are within the authority of the urban water supplier:

(1) Stages of action to be undertaken by the urban water supplier in response to water supply shortages, including up to a 50 percent reduction in water supply, and an outline of specific water supply conditions that are applicable to each stage.

(2) An estimate of the minimum water supply available during each of the next three water years based on the driest three-year historic

sequence for the agency's water supply.
(3) Actions to be undertaken by the urban water supplier to prepare for, and implement during, a catastrophic interruption of water supplies including, but not limited to, a regional power outage, an earthquake, or other disaster.
(4) Additional, mandatory prohibitions against specific water use practices during water shortages, including, but not limited to, prohibiting the use of potable water for street cleaning.
(5) Consumption reduction methods in the most restrictive stages. Each urban water supplier may use any type of consumption reduction methods in its water shortage contingency analysis that would reduce water use, are appropriate for its area, and have the ability to achieve a water use reduction consistent with up to a 50 percent reduction in water supply.
(6) Penalties or charges for excessive use, where applicable.
(7) An analysis of the impacts of each of the actions and conditions described in paragraphs (1) to (6), inclusive, on the revenues and expenditures of the urban water supplier, and proposed measures to overcome those impacts, such as the development of reserves and rate adjustments.
(8) A draft water shortage contingency resolution or ordinance.
(9) A mechanism for determining actual reductions in water use pursuant to the urban water shortage contingency analysis.
(b) Commencing with the urban water management plan update due December 31, 2015, for purposes of developing the water shortage contingency analysis pursuant to subdivision (a), the urban water supplier shall analyze and define water features that are artificially supplied with water, including ponds, lakes, waterfalls, and fountains, separately from swimming pools and spas, as defined in subdivision (a) of Section 115921 of the Health and Safety Code.

10633. The plan shall provide, to the extent available, information on recycled water and its potential for use as a water source in the service area of the urban water supplier. The preparation of the plan shall be coordinated with local water, wastewater, groundwater, and planning agencies that operate within the supplier's service area, and shall include all of the following:
(a) A description of the wastewater collection and treatment systems in the supplier's service area, including a quantification of the amount of wastewater collected and treated and the methods of wastewater disposal.
(b) A description of the quantity of treated wastewater that meets recycled water standards, is being discharged, and is otherwise available for use in a recycled water project.
(c) A description of the recycled water currently being used in the supplier's service area, including, but not limited to, the type, place, and quantity of use.
(d) A description and quantification of the potential uses of recycled water, including, but not limited to, agricultural irrigation, landscape irrigation, wildlife habitat enhancement, wetlands, industrial reuse, groundwater recharge, indirect potable reuse, and other appropriate uses, and a determination with regard to the technical and economic feasibility of serving those uses.
(e) The projected use of recycled water within the supplier's

service area at the end of 5, 10, 15, and 20 years, and a description of the actual use of recycled water in comparison to uses previously projected pursuant to this subdivision.

(f) A description of actions, including financial incentives, which may be taken to encourage the use of recycled water, and the projected results of these actions in terms of acre-feet of recycled water used per year.

(g) A plan for optimizing the use of recycled water in the supplier's service area, including actions to facilitate the installation of dual distribution systems, to promote recirculating uses, to facilitate the increased use of treated wastewater that meets recycled water standards, and to overcome any obstacles to achieving that increased use.

10634. The plan shall include information, to the extent practicable, relating to the quality of existing sources of water available to the supplier over the same five-year increments as described in subdivision (a) of Section 10631, and the manner in which water quality affects water management strategies and supply reliability.

WATER CODE SECTION 10635

10635. (a) Every urban water supplier shall include, as part of its urban water management plan, an assessment of the reliability of its water service to its customers during normal, dry, and multiple dry water years. This water supply and demand assessment shall compare the total water supply sources available to the water supplier with the total projected water use over the next 20 years, in five-year increments, for a normal water year, a single dry water year, and multiple dry water years. The water service reliability assessment shall be based upon the information compiled pursuant to Section 10631, including available data from state, regional, or local agency population projections within the service area of the urban water supplier.

(b) The urban water supplier shall provide that portion of its urban water management plan prepared pursuant to this article to any city or county within which it provides water supplies no later than 60 days after the submission of its urban water management plan.

(c) Nothing in this article is intended to create a right or entitlement to water service or any specific level of water service.

(d) Nothing in this article is intended to change existing law concerning an urban water supplier's obligation to provide water service to its existing customers or to any potential future customers.

WATER CODE
SECTION 10640-10645

10640. Every urban water supplier required to prepare a plan pursuant to this part shall prepare its plan pursuant to Article 2 (commencing with Section 10630).

The supplier shall likewise periodically review the plan as required by Section 10621, and any amendments or changes required as a result of that review shall be adopted pursuant to this article.

10641. An urban water supplier required to prepare a plan may consult with, and obtain comments from, any public agency or state agency or any person who has special expertise with respect to water demand management methods and techniques.

10642. Each urban water supplier shall encourage the active involvement of diverse social, cultural, and economic elements of the population within the service area prior to and during the preparation of the plan. Prior to adopting a plan, the urban water supplier shall make the plan available for public inspection and shall hold a public hearing thereon. Prior to the hearing, notice of the time and place of hearing shall be published within the jurisdiction of the publicly owned water supplier pursuant to Section 6066 of the Government Code. The urban water supplier shall provide notice of the time and place of hearing to any city or county within which the supplier provides water supplies. A privately owned water supplier shall provide an equivalent notice within its service area. After the hearing, the plan shall be adopted as prepared or as modified after the hearing.

10643. An urban water supplier shall implement its plan adopted pursuant to this chapter in accordance with the schedule set forth in its plan.

10644. (a) An urban water supplier shall submit to the department, the California State Library, and any city or county within which the supplier provides water supplies a copy of its plan no later than 30 days after adoption. Copies of amendments or changes to the plans shall be submitted to the department, the California State Library, and any city or county within which the supplier provides water supplies within 30 days after adoption.

(b) The department shall prepare and submit to the Legislature, on or before December 31, in the years ending in six and one, a report summarizing the status of the plans adopted pursuant to this part. The report prepared by the department shall identify the exemplary elements of the individual plans. The department shall provide a copy of the report to each urban water supplier that has submitted its plan to the department. The department shall also prepare reports and provide data for any legislative hearings designed to consider the effectiveness of plans submitted pursuant to this part.

(c) (1) For the purpose of identifying the exemplary elements of the individual plans, the department shall identify in the report those water demand management measures adopted and implemented by specific urban water suppliers, and identified pursuant to Section

10631, that achieve water savings significantly above the levels established by the department to meet the requirements of Section 10631.5.

(2) The department shall distribute to the panel convened pursuant to Section 10631.7 the results achieved by the implementation of those water demand management measures described in paragraph (1).

(3) The department shall make available to the public the standard the department will use to identify exemplary water demand management measures.

10645. Not later than 30 days after filing a copy of its plan with the department, the urban water supplier and the department shall make the plan available for public review during normal business hours.

WATER CODE
SECTION 10650-10656

10650. Any actions or proceedings to attack, review, set aside, void, or annul the acts or decisions of an urban water supplier on the grounds of noncompliance with this part shall be commenced as follows:

(a) An action or proceeding alleging failure to adopt a plan shall be commenced within 18 months after that adoption is required by this part.

(b) Any action or proceeding alleging that a plan, or action taken pursuant to the plan, does not comply with this part shall be commenced within 90 days after filing of the plan or amendment thereto pursuant to Section 10644 or the taking of that action.

10651. In any action or proceeding to attack, review, set aside, void, or annul a plan, or an action taken pursuant to the plan by an urban water supplier on the grounds of noncompliance with this part, the inquiry shall extend only to whether there was a prejudicial abuse of discretion. Abuse of discretion is established if the supplier has not proceeded in a manner required by law or if the action by the water supplier is not supported by substantial evidence.

10652. The California Environmental Quality Act (Division 13 (commencing with Section 21000) of the Public Resources Code) does not apply to the preparation and adoption of plans pursuant to this part or to the implementation of actions taken pursuant to Section 10632. Nothing in this part shall be interpreted as exempting from the California Environmental Quality Act any project that would significantly affect water supplies for fish and wildlife, or any project for implementation of the plan, other than projects implementing Section 10632, or any project for expanded or additional water supplies.

10653. The adoption of a plan shall satisfy any requirements of state law, regulation, or order, including those of the State Water Resources Control Board and the Public Utilities Commission, for the preparation of water management plans or conservation plans; provided, that if the State Water Resources Control Board or the Public Utilities Commission requires additional information concerning water conservation to implement its existing authority, nothing in this part shall be deemed to limit the board or the commission in obtaining that information. The requirements of this part shall be satisfied by any urban water demand management plan prepared to meet federal laws or regulations after the effective date of this part, and which substantially meets the requirements of this part, or by any existing urban water management plan which includes the contents of a plan required under this part.

10654. An urban water supplier may recover in its rates the costs incurred in preparing its plan and implementing the reasonable water conservation measures included in the plan. Any best water management practice that is included in the plan that is identified in the

"Memorandum of Understanding Regarding Urban Water Conservation in California" is deemed to be reasonable for the purposes of this section.

10655. If any provision of this part or the application thereof to any person or circumstances is held invalid, that invalidity shall not affect other provisions or applications of this part which can be given effect without the invalid provision or application thereof, and to this end the provisions of this part are severable.

10656. An urban water supplier that does not prepare, adopt, and submit its urban water management plan to the department in accordance with this part, is ineligible to receive funding pursuant to Division 24 (commencing with Section 78500) or Division 26 (commencing with Section 79000), or receive drought assistance from the state until the urban water management plan is submitted pursuant to this article.

Senate Bill No. 7

CHAPTER 4

An act to amend and repeal Section 10631.5 of, to add Part 2.55 (commencing with Section 10608) to Division 6 of, and to repeal and add Part 2.8 (commencing with Section 10800) of Division 6 of, the Water Code, relating to water.

[Approved by Governor November 10, 2009. Filed with Secretary of State November 10, 2009.]

LEGISLATIVE COUNSEL'S DIGEST

SB 7, Steinberg. Water conservation.

(1) Existing law requires the Department of Water Resources to convene an independent technical panel to provide information to the department and the Legislature on new demand management measures, technologies, and approaches. "Demand management measures" means those water conservation measures, programs, and incentives that prevent the waste of water and promote the reasonable and efficient use and reuse of available supplies.

This bill would require the state to achieve a 20% reduction in urban per capita water use in California by December 31, 2020. The state would be required to make incremental progress towards this goal by reducing per capita water use by at least 10% on or before December 31, 2015. The bill would require each urban retail water supplier to develop urban water use targets and an interim urban water use target, in accordance with specified requirements. The bill would require agricultural water suppliers to implement efficient water management practices. The bill would require the department, in consultation with other state agencies, to develop a single standardized water use reporting form. The bill, with certain exceptions, would provide that urban retail water suppliers, on and after July 1, 2016, and agricultural water suppliers, on and after July 1, 2013, are not eligible for state water grants or loans unless they comply with the water conservation requirements established by the bill. The bill would repeal, on July 1, 2016, an existing requirement that conditions eligibility for certain water management grants or loans to an urban water supplier on the implementation of certain water demand management measures.

(2) Existing law, until January 1, 1993, and thereafter only as specified, requires certain agricultural water suppliers to prepare and adopt water management plans.

This bill would revise existing law relating to agricultural water management planning to require agricultural water suppliers to prepare and adopt agricultural water management plans with specified components on or before December 31, 2012, and update those plans on or before December

31, 2015, and on or before December 31 every 5 years thereafter. An agricultural water supplier that becomes an agricultural water supplier after December 31, 2012, would be required to prepare and adopt an agricultural water management plan within one year after becoming an agricultural water supplier. The agricultural water supplier would be required to notify each city or county within which the supplier provides water supplies with regard to the preparation or review of the plan. The bill would require the agricultural water supplier to submit copies of the plan to the department and other specified entities. The bill would provide that an agricultural water supplier is not eligible for state water grants or loans unless the supplier complies with the water management planning requirements established by the bill.

(3) The bill would take effect only if SB 1 and SB 6 of the 2009–10 7th Extraordinary Session of the Legislature are enacted and become effective.

The people of the State of California do enact as follows:

SECTION 1. Part 2.55 (commencing with Section 10608) is added to Division 6 of the Water Code, to read:

PART 2.55. SUSTAINABLE WATER USE AND DEMAND REDUCTION

Chapter 1. General Declarations and Policy

10608. The Legislature finds and declares all of the following:

(a) Water is a public resource that the California Constitution protects against waste and unreasonable use.

(b) Growing population, climate change, and the need to protect and grow California's economy while protecting and restoring our fish and wildlife habitats make it essential that the state manage its water resources as efficiently as possible.

(c) Diverse regional water supply portfolios will increase water supply reliability and reduce dependence on the Delta.

(d) Reduced water use through conservation provides significant energy and environmental benefits, and can help protect water quality, improve streamflows, and reduce greenhouse gas emissions.

(e) The success of state and local water conservation programs to increase efficiency of water use is best determined on the basis of measurable outcomes related to water use or efficiency.

(f) Improvements in technology and management practices offer the potential for increasing water efficiency in California over time, providing an essential water management tool to meet the need for water for urban, agricultural, and environmental uses.

(g) The Governor has called for a 20 percent per capita reduction in urban water use statewide by 2020.

(h) The factors used to formulate water use efficiency targets can vary significantly from location to location based on factors including weather, patterns of urban and suburban development, and past efforts to enhance water use efficiency.

(i) Per capita water use is a valid measure of a water provider's efforts to reduce urban water use within its service area. However, per capita water use is less useful for measuring relative water use efficiency between different water providers. Differences in weather, historical patterns of urban and suburban development, and density of housing in a particular location need to be considered when assessing per capita water use as a measure of efficiency.

10608.4. It is the intent of the Legislature, by the enactment of this part, to do all of the following:

(a) Require all water suppliers to increase the efficiency of use of this essential resource.

(b) Establish a framework to meet the state targets for urban water conservation identified in this part and called for by the Governor.

(c) Measure increased efficiency of urban water use on a per capita basis.

(d) Establish a method or methods for urban retail water suppliers to determine targets for achieving increased water use efficiency by the year 2020, in accordance with the Governor's goal of a 20-percent reduction.

(e) Establish consistent water use efficiency planning and implementation standards for urban water suppliers and agricultural water suppliers.

(f) Promote urban water conservation standards that are consistent with the California Urban Water Conservation Council's adopted best management practices and the requirements for demand management in Section 10631.

(g) Establish standards that recognize and provide credit to water suppliers that made substantial capital investments in urban water conservation since the drought of the early 1990s.

(h) Recognize and account for the investment of urban retail water suppliers in providing recycled water for beneficial uses.

(i) Require implementation of specified efficient water management practices for agricultural water suppliers.

(j) Support the economic productivity of California's agricultural, commercial, and industrial sectors.

(k) Advance regional water resources management.

10608.8. (a) (1) Water use efficiency measures adopted and implemented pursuant to this part or Part 2.8 (commencing with Section 10800) are water conservation measures subject to the protections provided under Section 1011.

(2) Because an urban agency is not required to meet its urban water use target until 2020 pursuant to subdivision (b) of Section 10608.24, an urban retail water supplier's failure to meet those targets shall not establish a violation of law for purposes of any state administrative or judicial proceeding prior to January 1, 2021. Nothing in this paragraph limits the use of data reported to the department or the board in litigation or an

administrative proceeding. This paragraph shall become inoperative on January 1, 2021.

(3) To the extent feasible, the department and the board shall provide for the use of water conservation reports required under this part to meet the requirements of Section 1011 for water conservation reporting.

(b) This part does not limit or otherwise affect the application of Chapter 3.5 (commencing with Section 11340), Chapter 4 (commencing with Section 11370), Chapter 4.5 (commencing with Section 11400), and Chapter 5 (commencing with Section 11500) of Part 1 of Division 3 of Title 2 of the Government Code.

(c) This part does not require a reduction in the total water used in the agricultural or urban sectors, because other factors, including, but not limited to, changes in agricultural economics or population growth may have greater effects on water use. This part does not limit the economic productivity of California's agricultural, commercial, or industrial sectors.

(d) The requirements of this part do not apply to an agricultural water supplier that is a party to the Quantification Settlement Agreement, as defined in subdivision (a) of Section 1 of Chapter 617 of the Statutes of 2002, during the period within which the Quantification Settlement Agreement remains in effect. After the expiration of the Quantification Settlement Agreement, to the extent conservation water projects implemented as part of the Quantification Settlement Agreement remain in effect, the conserved water created as part of those projects shall be credited against the obligations of the agricultural water supplier pursuant to this part.

Chapter 2. Definitions

10608.12. Unless the context otherwise requires, the following definitions govern the construction of this part:

(a) "Agricultural water supplier" means a water supplier, either publicly or privately owned, providing water to 10,000 or more irrigated acres, excluding recycled water. "Agricultural water supplier" includes a supplier or contractor for water, regardless of the basis of right, that distributes or sells water for ultimate resale to customers. "Agricultural water supplier" does not include the department.

(b) "Base daily per capita water use" means any of the following:

(1) The urban retail water supplier's estimate of its average gross water use, reported in gallons per capita per day and calculated over a continuous 10-year period ending no earlier than December 31, 2004, and no later than December 31, 2010.

(2) For an urban retail water supplier that meets at least 10 percent of its 2008 measured retail water demand through recycled water that is delivered within the service area of an urban retail water supplier or its urban wholesale water supplier, the urban retail water supplier may extend the calculation described in paragraph (1) up to an additional five years to a maximum of

a continuous 15-year period ending no earlier than December 31, 2004, and no later than December 31, 2010.

(3) For the purposes of Section 10608.22, the urban retail water supplier's estimate of its average gross water use, reported in gallons per capita per day and calculated over a continuous five-year period ending no earlier than December 31, 2007, and no later than December 31, 2010.

(c) "Baseline commercial, industrial, and institutional water use" means an urban retail water supplier's base daily per capita water use for commercial, industrial, and institutional users.

(d) "Commercial water user" means a water user that provides or distributes a product or service.

(e) "Compliance daily per capita water use" means the gross water use during the final year of the reporting period, reported in gallons per capita per day.

(f) "Disadvantaged community" means a community with an annual median household income that is less than 80 percent of the statewide annual median household income.

(g) "Gross water use" means the total volume of water, whether treated or untreated, entering the distribution system of an urban retail water supplier, excluding all of the following:

(1) Recycled water that is delivered within the service area of an urban retail water supplier or its urban wholesale water supplier.

(2) The net volume of water that the urban retail water supplier places into long-term storage.

(3) The volume of water the urban retail water supplier conveys for use by another urban water supplier.

(4) The volume of water delivered for agricultural use, except as otherwise provided in subdivision (f) of Section 10608.24.

(h) "Industrial water user" means a water user that is primarily a manufacturer or processor of materials as defined by the North American Industry Classification System code sectors 31 to 33, inclusive, or an entity that is a water user primarily engaged in research and development.

(i) "Institutional water user" means a water user dedicated to public service. This type of user includes, among other users, higher education institutions, schools, courts, churches, hospitals, government facilities, and nonprofit research institutions.

(j) "Interim urban water use target" means the midpoint between the urban retail water supplier's base daily per capita water use and the urban retail water supplier's urban water use target for 2020.

(k) "Locally cost effective" means that the present value of the local benefits of implementing an agricultural efficiency water management practice is greater than or equal to the present value of the local cost of implementing that measure.

(*l*) "Process water" means water used for producing a product or product content or water used for research and development, including, but not limited to, continuous manufacturing processes, water used for testing and maintaining equipment used in producing a product or product content, and

water used in combined heat and power facilities used in producing a product or product content. Process water does not mean incidental water uses not related to the production of a product or product content, including, but not limited to, water used for restrooms, landscaping, air conditioning, heating, kitchens, and laundry.

(m) "Recycled water" means recycled water, as defined in subdivision (n) of Section 13050, that is used to offset potable demand, including recycled water supplied for direct use and indirect potable reuse, that meets the following requirements, where applicable:

(1) For groundwater recharge, including recharge through spreading basins, water supplies that are all of the following:

(A) Metered.

(B) Developed through planned investment by the urban water supplier or a wastewater treatment agency.

(C) Treated to a minimum tertiary level.

(D) Delivered within the service area of an urban retail water supplier or its urban wholesale water supplier that helps an urban retail water supplier meet its urban water use target.

(2) For reservoir augmentation, water supplies that meet the criteria of paragraph (1) and are conveyed through a distribution system constructed specifically for recycled water.

(n) "Regional water resources management" means sources of supply resulting from watershed-based planning for sustainable local water reliability or any of the following alternative sources of water:

(1) The capture and reuse of stormwater or rainwater.

(2) The use of recycled water.

(3) The desalination of brackish groundwater.

(4) The conjunctive use of surface water and groundwater in a manner that is consistent with the safe yield of the groundwater basin.

(o) "Reporting period" means the years for which an urban retail water supplier reports compliance with the urban water use targets.

(p) "Urban retail water supplier" means a water supplier, either publicly or privately owned, that directly provides potable municipal water to more than 3,000 end users or that supplies more than 3,000 acre-feet of potable water annually at retail for municipal purposes.

(q) "Urban water use target" means the urban retail water supplier's targeted future daily per capita water use.

(r) "Urban wholesale water supplier," means a water supplier, either publicly or privately owned, that provides more than 3,000 acre-feet of water annually at wholesale for potable municipal purposes.

Chapter 3. Urban Retail Water Suppliers

10608.16. (a) The state shall achieve a 20-percent reduction in urban per capita water use in California on or before December 31, 2020.

(b) The state shall make incremental progress towards the state target specified in subdivision (a) by reducing urban per capita water use by at least 10 percent on or before December 31, 2015.

10608.20. (a) (1) Each urban retail water supplier shall develop urban water use targets and an interim urban water use target by July 1, 2011. Urban retail water suppliers may elect to determine and report progress toward achieving these targets on an individual or regional basis, as provided in subdivision (a) of Section 10608.28, and may determine the targets on a fiscal year or calendar year basis.

(2) It is the intent of the Legislature that the urban water use targets described in subdivision (a) cumulatively result in a 20-percent reduction from the baseline daily per capita water use by December 31, 2020.

(b) An urban retail water supplier shall adopt one of the following methods for determining its urban water use target pursuant to subdivision (a):

(1) Eighty percent of the urban retail water supplier's baseline per capita daily water use.

(2) The per capita daily water use that is estimated using the sum of the following performance standards:

(A) For indoor residential water use, 55 gallons per capita daily water use as a provisional standard. Upon completion of the department's 2016 report to the Legislature pursuant to Section 10608.42, this standard may be adjusted by the Legislature by statute.

(B) For landscape irrigated through dedicated or residential meters or connections, water efficiency equivalent to the standards of the Model Water Efficient Landscape Ordinance set forth in Chapter 2.7 (commencing with Section 490) of Division 2 of Title 23 of the California Code of Regulations, as in effect the later of the year of the landscape's installation or 1992. An urban retail water supplier using the approach specified in this subparagraph shall use satellite imagery, site visits, or other best available technology to develop an accurate estimate of landscaped areas.

(C) For commercial, industrial, and institutional uses, a 10-percent reduction in water use from the baseline commercial, industrial, and institutional water use by 2020.

(3) Ninety-five percent of the applicable state hydrologic region target, as set forth in the state's draft 20x2020 Water Conservation Plan (dated April 30, 2009). If the service area of an urban water supplier includes more than one hydrologic region, the supplier shall apportion its service area to each region based on population or area.

(4) A method that shall be identified and developed by the department, through a public process, and reported to the Legislature no later than December 31, 2010. The method developed by the department shall identify per capita targets that cumulatively result in a statewide 20-percent reduction in urban daily per capita water use by December 31, 2020. In developing urban daily per capita water use targets, the department shall do all of the following:

(A) Consider climatic differences within the state.

(B) Consider population density differences within the state.

(C) Provide flexibility to communities and regions in meeting the targets.

(D) Consider different levels of per capita water use according to plant water needs in different regions.

(E) Consider different levels of commercial, industrial, and institutional water use in different regions of the state.

(F) Avoid placing an undue hardship on communities that have implemented conservation measures or taken actions to keep per capita water use low.

(c) If the department adopts a regulation pursuant to paragraph (4) of subdivision (b) that results in a requirement that an urban retail water supplier achieve a reduction in daily per capita water use that is greater than 20 percent by December 31, 2020, an urban retail water supplier that adopted the method described in paragraph (4) of subdivision (b) may limit its urban water use target to a reduction of not more than 20 percent by December 31, 2020, by adopting the method described in paragraph (1) of subdivision (b).

(d) The department shall update the method described in paragraph (4) of subdivision (b) and report to the Legislature by December 31, 2014. An urban retail water supplier that adopted the method described in paragraph (4) of subdivision (b) may adopt a new urban daily per capita water use target pursuant to this updated method.

(e) An urban retail water supplier shall include in its urban water management plan required pursuant to Part 2.6 (commencing with Section 10610) due in 2010 the baseline daily per capita water use, urban water use target, interim urban water use target, and compliance daily per capita water use, along with the bases for determining those estimates, including references to supporting data.

(f) When calculating per capita values for the purposes of this chapter, an urban retail water supplier shall determine population using federal, state, and local population reports and projections.

(g) An urban retail water supplier may update its 2020 urban water use target in its 2015 urban water management plan required pursuant to Part 2.6 (commencing with Section 10610).

(h) (1) The department, through a public process and in consultation with the California Urban Water Conservation Council, shall develop technical methodologies and criteria for the consistent implementation of this part, including, but not limited to, both of the following:

(A) Methodologies for calculating base daily per capita water use, baseline commercial, industrial, and institutional water use, compliance daily per capita water use, gross water use, service area population, indoor residential water use, and landscaped area water use.

(B) Criteria for adjustments pursuant to subdivisions (d) and (e) of Section 10608.24.

(2) The department shall post the methodologies and criteria developed pursuant to this subdivision on its Internet Web site, and make written copies

available, by October 1, 2010. An urban retail water supplier shall use the methods developed by the department in compliance with this part.

(i) (1) The department shall adopt regulations for implementation of the provisions relating to process water in accordance with subdivision (*l*) of Section 10608.12, subdivision (e) of Section 10608.24, and subdivision (d) of Section 10608.26.

(2) The initial adoption of a regulation authorized by this subdivision is deemed to address an emergency, for purposes of Sections 11346.1 and 11349.6 of the Government Code, and the department is hereby exempted for that purpose from the requirements of subdivision (b) of Section 11346.1 of the Government Code. After the initial adoption of an emergency regulation pursuant to this subdivision, the department shall not request approval from the Office of Administrative Law to readopt the regulation as an emergency regulation pursuant to Section 11346.1 of the Government Code.

(j) An urban retail water supplier shall be granted an extension to July 1, 2011, for adoption of an urban water management plan pursuant to Part 2.6 (commencing with Section 10610) due in 2010 to allow use of technical methodologies developed by the department pursuant to paragraph (4) of subdivision (b) and subdivision (h). An urban retail water supplier that adopts an urban water management plan due in 2010 that does not use the methodologies developed by the department pursuant to subdivision (h) shall amend the plan by July 1, 2011, to comply with this part.

10608.22. Notwithstanding the method adopted by an urban retail water supplier pursuant to Section 10608.20, an urban retail water supplier's per capita daily water use reduction shall be no less than 5 percent of base daily per capita water use as defined in paragraph (3) of subdivision (b) of Section 10608.12. This section does not apply to an urban retail water supplier with a base daily per capita water use at or below 100 gallons per capita per day.

10608.24. (a) Each urban retail water supplier shall meet its interim urban water use target by December 31, 2015.

(b) Each urban retail water supplier shall meet its urban water use target by December 31, 2020.

(c) An urban retail water supplier's compliance daily per capita water use shall be the measure of progress toward achievement of its urban water use target.

(d) (1) When determining compliance daily per capita water use, an urban retail water supplier may consider the following factors:

(A) Differences in evapotranspiration and rainfall in the baseline period compared to the compliance reporting period.

(B) Substantial changes to commercial or industrial water use resulting from increased business output and economic development that have occurred during the reporting period.

(C) Substantial changes to institutional water use resulting from fire suppression services or other extraordinary events, or from new or expanded operations, that have occurred during the reporting period.

(2) If the urban retail water supplier elects to adjust its estimate of compliance daily per capita water use due to one or more of the factors described in paragraph (1), it shall provide the basis for, and data supporting, the adjustment in the report required by Section 10608.40.

(e) When developing the urban water use target pursuant to Section 10608.20, an urban retail water supplier that has a substantial percentage of industrial water use in its service area, may exclude process water from the calculation of gross water use to avoid a disproportionate burden on another customer sector.

(f) (1) An urban retail water supplier that includes agricultural water use in an urban water management plan pursuant to Part 2.6 (commencing with Section 10610) may include the agricultural water use in determining gross water use. An urban retail water supplier that includes agricultural water use in determining gross water use and develops its urban water use target pursuant to paragraph (2) of subdivision (b) of Section 10608.20 shall use a water efficient standard for agricultural irrigation of 100 percent of reference evapotranspiration multiplied by the crop coefficient for irrigated acres.

(2) An urban retail water supplier, that is also an agricultural water supplier, is not subject to the requirements of Chapter 4 (commencing with Section 10608.48), if the agricultural water use is incorporated into its urban water use target pursuant to paragraph (1).

10608.26. (a) In complying with this part, an urban retail water supplier shall conduct at least one public hearing to accomplish all of the following:

(1) Allow community input regarding the urban retail water supplier's implementation plan for complying with this part.

(2) Consider the economic impacts of the urban retail water supplier's implementation plan for complying with this part.

(3) Adopt a method, pursuant to subdivision (b) of Section 10608.20, for determining its urban water use target.

(b) In complying with this part, an urban retail water supplier may meet its urban water use target through efficiency improvements in any combination among its customer sectors. An urban retail water supplier shall avoid placing a disproportionate burden on any customer sector.

(c) For an urban retail water supplier that supplies water to a United States Department of Defense military installation, the urban retail water supplier's implementation plan for complying with this part shall consider the United States Department of Defense military installation's requirements under federal Executive Order 13423.

(d) (1) Any ordinance or resolution adopted by an urban retail water supplier after the effective date of this section shall not require existing customers as of the effective date of this section, to undertake changes in product formulation, operations, or equipment that would reduce process water use, but may provide technical assistance and financial incentives to those customers to implement efficiency measures for process water. This section shall not limit an ordinance or resolution adopted pursuant to a declaration of drought emergency by an urban retail water supplier.

(2) This part shall not be construed or enforced so as to interfere with the requirements of Chapter 4 (commencing with Section 113980) to Chapter 13 (commencing with Section 114380), inclusive, of Part 7 of Division 104 of the Health and Safety Code, or any requirement or standard for the protection of public health, public safety, or worker safety established by federal, state, or local government or recommended by recognized standard setting organizations or trade associations.

10608.28. (a) An urban retail water supplier may meet its urban water use target within its retail service area, or through mutual agreement, by any of the following:

(1) Through an urban wholesale water supplier.

(2) Through a regional agency authorized to plan and implement water conservation, including, but not limited to, an agency established under the Bay Area Water Supply and Conservation Agency Act (Division 31 (commencing with Section 81300)).

(3) Through a regional water management group as defined in Section 10537.

(4) By an integrated regional water management funding area.

(5) By hydrologic region.

(6) Through other appropriate geographic scales for which computation methods have been developed by the department.

(b) A regional water management group, with the written consent of its member agencies, may undertake any or all planning, reporting, and implementation functions under this chapter for the member agencies that consent to those activities. Any data or reports shall provide information both for the regional water management group and separately for each consenting urban retail water supplier and urban wholesale water supplier.

10608.32. All costs incurred pursuant to this part by a water utility regulated by the Public Utilities Commission may be recoverable in rates subject to review and approval by the Public Utilities Commission, and may be recorded in a memorandum account and reviewed for reasonableness by the Public Utilities Commission.

10608.36. Urban wholesale water suppliers shall include in the urban water management plans required pursuant to Part 2.6 (commencing with Section 10610) an assessment of their present and proposed future measures, programs, and policies to help achieve the water use reductions required by this part.

10608.40. Urban water retail suppliers shall report to the department on their progress in meeting their urban water use targets as part of their urban water management plans submitted pursuant to Section 10631. The data shall be reported using a standardized form developed pursuant to Section 10608.52.

10608.42. The department shall review the 2015 urban water management plans and report to the Legislature by December 31, 2016, on progress towards achieving a 20-percent reduction in urban water use by December 31, 2020. The report shall include recommendations on changes to water efficiency standards or urban water use targets in order to achieve

the 20-percent reduction and to reflect updated efficiency information and technology changes.

10608.43. The department, in conjunction with the California Urban Water Conservation Council, by April 1, 2010, shall convene a representative task force consisting of academic experts, urban retail water suppliers, environmental organizations, commercial water users, industrial water users, and institutional water users to develop alternative best management practices for commercial, industrial, and institutional users and an assessment of the potential statewide water use efficiency improvement in the commercial, industrial, and institutional sectors that would result from implementation of these best management practices. The taskforce, in conjunction with the department, shall submit a report to the Legislature by April 1, 2012, that shall include a review of multiple sectors within commercial, industrial, and institutional users and that shall recommend water use efficiency standards for commercial, industrial, and institutional users among various sectors of water use. The report shall include, but not be limited to, the following:

(a) Appropriate metrics for evaluating commercial, industrial, and institutional water use.

(b) Evaluation of water demands for manufacturing processes, goods, and cooling.

(c) Evaluation of public infrastructure necessary for delivery of recycled water to the commercial, industrial, and institutional sectors.

(d) Evaluation of institutional and economic barriers to increased recycled water use within the commercial, industrial, and institutional sectors.

(e) Identification of technical feasibility and cost of the best management practices to achieve more efficient water use statewide in the commercial, industrial, and institutional sectors that is consistent with the public interest and reflects past investments in water use efficiency.

10608.44. Each state agency shall reduce water use on facilities it operates to support urban retail water suppliers in meeting the target identified in Section 10608.16.

Chapter 4. Agricultural Water Suppliers

10608.48. (a) On or before July 31, 2012, an agricultural water supplier shall implement efficient water management practices pursuant to subdivisions (b) and (c).

(b) Agricultural water suppliers shall implement all of the following critical efficient management practices:

(1) Measure the volume of water delivered to customers with sufficient accuracy to comply with subdivision (a) of Section 531.10 and to implement paragraph (2).

(2) Adopt a pricing structure for water customers based at least in part on quantity delivered.

(c) Agricultural water suppliers shall implement additional efficient management practices, including, but not limited to, practices to accomplish all of the following, if the measures are locally cost effective and technically feasible:

(1) Facilitate alternative land use for lands with exceptionally high water duties or whose irrigation contributes to significant problems, including drainage.

(2) Facilitate use of available recycled water that otherwise would not be used beneficially, meets all health and safety criteria, and does not harm crops or soils.

(3) Facilitate the financing of capital improvements for on-farm irrigation systems.

(4) Implement an incentive pricing structure that promotes one or more of the following goals:

(A) More efficient water use at the farm level.

(B) Conjunctive use of groundwater.

(C) Appropriate increase of groundwater recharge.

(D) Reduction in problem drainage.

(E) Improved management of environmental resources.

(F) Effective management of all water sources throughout the year by adjusting seasonal pricing structures based on current conditions.

(5) Expand line or pipe distribution systems, and construct regulatory reservoirs to increase distribution system flexibility and capacity, decrease maintenance, and reduce seepage.

(6) Increase flexibility in water ordering by, and delivery to, water customers within operational limits.

(7) Construct and operate supplier spill and tailwater recovery systems.

(8) Increase planned conjunctive use of surface water and groundwater within the supplier service area.

(9) Automate canal control structures.

(10) Facilitate or promote customer pump testing and evaluation.

(11) Designate a water conservation coordinator who will develop and implement the water management plan and prepare progress reports.

(12) Provide for the availability of water management services to water users. These services may include, but are not limited to, all of the following:

(A) On-farm irrigation and drainage system evaluations.

(B) Normal year and real-time irrigation scheduling and crop evapotranspiration information.

(C) Surface water, groundwater, and drainage water quantity and quality data.

(D) Agricultural water management educational programs and materials for farmers, staff, and the public.

(13) Evaluate the policies of agencies that provide the supplier with water to identify the potential for institutional changes to allow more flexible water deliveries and storage.

(14) Evaluate and improve the efficiencies of the supplier’s pumps.

(d) Agricultural water suppliers shall include in the agricultural water management plans required pursuant to Part 2.8 (commencing with Section 10800) a report on which efficient water management practices have been implemented and are planned to be implemented, an estimate of the water use efficiency improvements that have occurred since the last report, and an estimate of the water use efficiency improvements estimated to occur five and 10 years in the future. If an agricultural water supplier determines that an efficient water management practice is not locally cost effective or technically feasible, the supplier shall submit information documenting that determination.

(e) The data shall be reported using a standardized form developed pursuant to Section 10608.52.

(f) An agricultural water supplier may meet the requirements of subdivisions (d) and (e) by submitting to the department a water conservation plan submitted to the United States Bureau of Reclamation that meets the requirements described in Section 10828.

(g) On or before December 31, 2013, December 31, 2016, and December 31, 2021, the department, in consultation with the board, shall submit to the Legislature a report on the agricultural efficient water management practices that have been implemented and are planned to be implemented and an assessment of the manner in which the implementation of those efficient water management practices has affected and will affect agricultural operations, including estimated water use efficiency improvements, if any.

(h) The department may update the efficient water management practices required pursuant to subdivision (c), in consultation with the Agricultural Water Management Council, the United States Bureau of Reclamation, and the board. All efficient water management practices for agricultural water use pursuant to this chapter shall be adopted or revised by the department only after the department conducts public hearings to allow participation of the diverse geographical areas and interests of the state.

(i) (1) The department shall adopt regulations that provide for a range of options that agricultural water suppliers may use or implement to comply with the measurement requirement in paragraph (1) of subdivision (b).

(2) The initial adoption of a regulation authorized by this subdivision is deemed to address an emergency, for purposes of Sections 11346.1 and 11349.6 of the Government Code, and the department is hereby exempted for that purpose from the requirements of subdivision (b) of Section 11346.1 of the Government Code. After the initial adoption of an emergency regulation pursuant to this subdivision, the department shall not request approval from the Office of Administrative Law to readopt the regulation as an emergency regulation pursuant to Section 11346.1 of the Government Code.

Chapter 5. Sustainable Water Management

10608.50. (a) The department, in consultation with the board, shall promote implementation of regional water resources management practices through increased incentives and removal of barriers consistent with state and federal law. Potential changes may include, but are not limited to, all of the following:

(1) Revisions to the requirements for urban and agricultural water management plans.

(2) Revisions to the requirements for integrated regional water management plans.

(3) Revisions to the eligibility for state water management grants and loans.

(4) Revisions to state or local permitting requirements that increase water supply opportunities, but do not weaken water quality protection under state and federal law.

(5) Increased funding for research, feasibility studies, and project construction.

(6) Expanding technical and educational support for local land use and water management agencies.

(b) No later than January 1, 2011, and updated as part of the California Water Plan, the department, in consultation with the board, and with public input, shall propose new statewide targets, or review and update existing statewide targets, for regional water resources management practices, including, but not limited to, recycled water, brackish groundwater desalination, and infiltration and direct use of urban stormwater runoff.

Chapter 6. Standardized Data Collection

10608.52. (a) The department, in consultation with the board, the California Bay-Delta Authority or its successor agency, the State Department of Public Health, and the Public Utilities Commission, shall develop a single standardized water use reporting form to meet the water use information needs of each agency, including the needs of urban water suppliers that elect to determine and report progress toward achieving targets on a regional basis as provided in subdivision (a) of Section 10608.28.

(b) At a minimum, the form shall be developed to accommodate information sufficient to assess an urban water supplier's compliance with conservation targets pursuant to Section 10608.24 and an agricultural water supplier's compliance with implementation of efficient water management practices pursuant to subdivision (a) of Section 10608.48. The form shall accommodate reporting by urban water suppliers on an individual or regional basis as provided in subdivision (a) of Section 10608.28.

10608.56. (a) On and after July 1, 2016, an urban retail water supplier is not eligible for a water grant or loan awarded or administered by the state unless the supplier complies with this part.

(b) On and after July 1, 2013, an agricultural water supplier is not eligible for a water grant or loan awarded or administered by the state unless the supplier complies with this part.

(c) Notwithstanding subdivision (a), the department shall determine that an urban retail water supplier is eligible for a water grant or loan even though the supplier has not met the per capita reductions required pursuant to Section 10608.24, if the urban retail water supplier has submitted to the department for approval a schedule, financing plan, and budget, to be included in the grant or loan agreement, for achieving the per capita reductions. The supplier may request grant or loan funds to achieve the per capita reductions to the extent the request is consistent with the eligibility requirements applicable to the water funds.

(d) Notwithstanding subdivision (b), the department shall determine that an agricultural water supplier is eligible for a water grant or loan even though the supplier is not implementing all of the efficient water management practices described in Section 10608.48, if the agricultural water supplier has submitted to the department for approval a schedule, financing plan, and budget, to be included in the grant or loan agreement, for implementation of the efficient water management practices. The supplier may request grant or loan funds to implement the efficient water management practices to the extent the request is consistent with the eligibility requirements applicable to the water funds.

(e) Notwithstanding subdivision (a), the department shall determine that an urban retail water supplier is eligible for a water grant or loan even though the supplier has not met the per capita reductions required pursuant to Section 10608.24, if the urban retail water supplier has submitted to the department for approval documentation demonstrating that its entire service area qualifies as a disadvantaged community.

(f) The department shall not deny eligibility to an urban retail water supplier or agricultural water supplier in compliance with the requirements of this part and Part 2.8 (commencing with Section 10800), that is participating in a multiagency water project, or an integrated regional water management plan, developed pursuant to Section 75026 of the Public Resources Code, solely on the basis that one or more of the agencies participating in the project or plan is not implementing all of the requirements of this part or Part 2.8 (commencing with Section 10800).

10608.60. (a) It is the intent of the Legislature that funds made available by Section 75026 of the Public Resources Code should be expended, consistent with Division 43 (commencing with Section 75001) of the Public Resources Code and upon appropriation by the Legislature, for grants to implement this part. In the allocation of funding, it is the intent of the

Legislature that the department give consideration to disadvantaged communities to assist in implementing the requirements of this part.

(b) It is the intent of the Legislature that funds made available by Section 75041 of the Public Resources Code, should be expended, consistent with Division 43 (commencing with Section 75001) of the Public Resources Code and upon appropriation by the Legislature, for direct expenditures to implement this part.

Chapter 8. Quantifying Agricultural Water Use Efficiency

10608.64. The department, in consultation with the Agricultural Water Management Council, academic experts, and other stakeholders, shall develop a methodology for quantifying the efficiency of agricultural water use. Alternatives to be assessed shall include, but not be limited to, determination of efficiency levels based on crop type or irrigation system distribution uniformity. On or before December 31, 2011, the department shall report to the Legislature on a proposed methodology and a plan for implementation. The plan shall include the estimated implementation costs and the types of data needed to support the methodology. Nothing in this section authorizes the department to implement a methodology established pursuant to this section.

SEC. 2. Section 10631.5 of the Water Code is amended to read:

10631.5. (a) (1) Beginning January 1, 2009, the terms of, and eligibility for, a water management grant or loan made to an urban water supplier and awarded or administered by the department, state board, or California Bay-Delta Authority or its successor agency shall be conditioned on the implementation of the water demand management measures described in Section 10631, as determined by the department pursuant to subdivision (b).

(2) For the purposes of this section, water management grants and loans include funding for programs and projects for surface water or groundwater storage, recycling, desalination, water conservation, water supply reliability, and water supply augmentation. This section does not apply to water management projects funded by the federal American Recovery and Reinvestment Act of 2009 (Public Law 111-5).

(3) Notwithstanding paragraph (1), the department shall determine that an urban water supplier is eligible for a water management grant or loan even though the supplier is not implementing all of the water demand management measures described in Section 10631, if the urban water supplier has submitted to the department for approval a schedule, financing plan, and budget, to be included in the grant or loan agreement, for implementation of the water demand management measures. The supplier may request grant or loan funds to implement the water demand management measures to the extent the request is consistent with the eligibility requirements applicable to the water management funds.

(4) (A) Notwithstanding paragraph (1), the department shall determine that an urban water supplier is eligible for a water management grant or loan even though the supplier is not implementing all of the water demand management measures described in Section 10631, if an urban water supplier submits to the department for approval documentation demonstrating that a water demand management measure is not locally cost effective. If the department determines that the documentation submitted by the urban water supplier fails to demonstrate that a water demand management measure is not locally cost effective, the department shall notify the urban water supplier and the agency administering the grant or loan program within 120 days that the documentation does not satisfy the requirements for an exemption, and include in that notification a detailed statement to support the determination.

(B) For purposes of this paragraph, "not locally cost effective" means that the present value of the local benefits of implementing a water demand management measure is less than the present value of the local costs of implementing that measure.

(b) (1) The department, in consultation with the state board and the California Bay-Delta Authority or its successor agency, and after soliciting public comment regarding eligibility requirements, shall develop eligibility requirements to implement the requirement of paragraph (1) of subdivision (a). In establishing these eligibility requirements, the department shall do both of the following:

(A) Consider the conservation measures described in the Memorandum of Understanding Regarding Urban Water Conservation in California, and alternative conservation approaches that provide equal or greater water savings.

(B) Recognize the different legal, technical, fiscal, and practical roles and responsibilities of wholesale water suppliers and retail water suppliers.

(2) (A) For the purposes of this section, the department shall determine whether an urban water supplier is implementing all of the water demand management measures described in Section 10631 based on either, or a combination, of the following:

(i) Compliance on an individual basis.

(ii) Compliance on a regional basis. Regional compliance shall require participation in a regional conservation program consisting of two or more urban water suppliers that achieves the level of conservation or water efficiency savings equivalent to the amount of conservation or savings achieved if each of the participating urban water suppliers implemented the water demand management measures. The urban water supplier administering the regional program shall provide participating urban water suppliers and the department with data to demonstrate that the regional program is consistent with this clause. The department shall review the data to determine whether the urban water suppliers in the regional program are meeting the eligibility requirements.

(B) The department may require additional information for any determination pursuant to this section.

(3) The department shall not deny eligibility to an urban water supplier in compliance with the requirements of this section that is participating in a multiagency water project, or an integrated regional water management plan, developed pursuant to Section 75026 of the Public Resources Code, solely on the basis that one or more of the agencies participating in the project or plan is not implementing all of the water demand management measures described in Section 10631.

(c) In establishing guidelines pursuant to the specific funding authorization for any water management grant or loan program subject to this section, the agency administering the grant or loan program shall include in the guidelines the eligibility requirements developed by the department pursuant to subdivision (b).

(d) Upon receipt of a water management grant or loan application by an agency administering a grant and loan program subject to this section, the agency shall request an eligibility determination from the department with respect to the requirements of this section. The department shall respond to the request within 60 days of the request.

(e) The urban water supplier may submit to the department copies of its annual reports and other relevant documents to assist the department in determining whether the urban water supplier is implementing or scheduling the implementation of water demand management activities. In addition, for urban water suppliers that are signatories to the Memorandum of Understanding Regarding Urban Water Conservation in California and submit biennial reports to the California Urban Water Conservation Council in accordance with the memorandum, the department may use these reports to assist in tracking the implementation of water demand management measures.

(f) This section shall remain in effect only until July 1, 2016, and as of that date is repealed, unless a later enacted statute, that is enacted before July 1, 2016, deletes or extends that date.

SEC. 3. Part 2.8 (commencing with Section 10800) of Division 6 of the Water Code is repealed.

SEC. 4. Part 2.8 (commencing with Section 10800) is added to Division 6 of the Water Code, to read:

PART 2.8. AGRICULTURAL WATER MANAGEMENT PLANNING

Chapter 1. General Declarations and Policy

10800. This part shall be known and may be cited as the Agricultural Water Management Planning Act.

10801. The Legislature finds and declares all of the following:

(a) The waters of the state are a limited and renewable resource.

(b) The California Constitution requires that water in the state be used in a reasonable and beneficial manner.

(c) Urban water districts are required to adopt water management plans.

(d) The conservation of agricultural water supplies is of great statewide concern.

(e) There is a great amount of reuse of delivered water, both inside and outside the water service areas.

(f) Significant noncrop beneficial uses are associated with agricultural water use, including streamflows and wildlife habitat.

(g) Significant opportunities exist in some areas, through improved irrigation water management, to conserve water or to reduce the quantity of highly saline or toxic drainage water.

(h) Changes in water management practices should be carefully planned and implemented to minimize adverse effects on other beneficial uses currently being served.

(i) Agricultural water suppliers that receive water from the federal Central Valley Project are required by federal law to prepare and implement water conservation plans.

(j) Agricultural water users applying for a permit to appropriate water from the board are required to prepare and implement water conservation plans.

10802. The Legislature finds and declares that all of the following are the policies of the state:

(a) The conservation of water shall be pursued actively to protect both the people of the state and the state's water resources.

(b) The conservation of agricultural water supplies shall be an important criterion in public decisions with regard to water.

(c) Agricultural water suppliers shall be required to prepare water management plans to achieve conservation of water.

Chapter 2. Definitions

10810. Unless the context otherwise requires, the definitions set forth in this chapter govern the construction of this part.

10811. "Agricultural water management plan" or "plan" means an agricultural water management plan prepared pursuant to this part.

10812. "Agricultural water supplier" has the same meaning as defined in Section 10608.12.

10813. "Customer" means a purchaser of water from a water supplier who uses water for agricultural purposes.

10814. "Person" means any individual, firm, association, organization, partnership, business, trust, corporation, company, public agency, or any agency of that entity.

10815. "Public agency" means any city, county, city and county, special district, or other public entity.

10816. "Urban water supplier" has the same meaning as set forth in Section 10617.

10817. "Water conservation" means the efficient management of water resources for beneficial uses, preventing waste, or accomplishing additional benefits with the same amount of water.

Chapter 3. Agricultural Water Management Plans

Article 1. General Provisions

10820. (a) An agricultural water supplier shall prepare and adopt an agricultural water management plan in the manner set forth in this chapter on or before December 31, 2012, and shall update that plan on December 31, 2015, and on or before December 31 every five years thereafter.

(b) Every supplier that becomes an agricultural water supplier after December 31, 2012, shall prepare and adopt an agricultural water management plan within one year after the date it has become an agricultural water supplier.

(c) A water supplier that indirectly provides water to customers for agricultural purposes shall not prepare a plan pursuant to this part without the consent of each agricultural water supplier that directly provides that water to its customers.

10821. (a) An agricultural water supplier required to prepare a plan pursuant to this part shall notify each city or county within which the supplier provides water supplies that the agricultural water supplier will be preparing the plan or reviewing the plan and considering amendments or changes to the plan. The agricultural water supplier may consult with, and obtain comments from, each city or county that receives notice pursuant to this subdivision.

(b) The amendments to, or changes in, the plan shall be adopted and submitted in the manner set forth in Article 3 (commencing with Section 10840).

Article 2. Contents of Plans

10825. (a) It is the intent of the Legislature in enacting this part to allow levels of water management planning commensurate with the numbers of customers served and the volume of water supplied.

(b) This part does not require the implementation of water conservation programs or practices that are not locally cost effective.

10826. An agricultural water management plan shall be adopted in accordance with this chapter. The plan shall do all of the following:

(a) Describe the agricultural water supplier and the service area, including all of the following:

(1) Size of the service area.

(2) Location of the service area and its water management facilities.

(3) Terrain and soils.

(4) Climate.

(5) Operating rules and regulations.
(6) Water delivery measurements or calculations.
(7) Water rate schedules and billing.
(8) Water shortage allocation policies.

(b) Describe the quantity and quality of water resources of the agricultural water supplier, including all of the following:
(1) Surface water supply.
(2) Groundwater supply.
(3) Other water supplies.
(4) Source water quality monitoring practices.
(5) Water uses within the agricultural water supplier's service area, including all of the following:
(A) Agricultural.
(B) Environmental.
(C) Recreational.
(D) Municipal and industrial.
(E) Groundwater recharge.
(F) Transfers and exchanges.
(G) Other water uses.
(6) Drainage from the water supplier's service area.
(7) Water accounting, including all of the following:
(A) Quantifying the water supplier's water supplies.
(B) Tabulating water uses.
(C) Overall water budget.
(8) Water supply reliability.

(c) Include an analysis, based on available information, of the effect of climate change on future water supplies.

(d) Describe previous water management activities.

(e) Include in the plan the water use efficiency information required pursuant to Section 10608.48.

10827. Agricultural water suppliers that are members of the Agricultural Water Management Council, and that submit water management plans to that council in accordance with the "Memorandum of Understanding Regarding Efficient Water Management Practices By Agricultural Water Suppliers In California," dated January 1, 1999, may submit the water management plans identifying water demand management measures currently being implemented, or scheduled for implementation, to satisfy the requirements of Section 10826.

10828. (a) Agricultural water suppliers that are required to submit water conservation plans to the United States Bureau of Reclamation pursuant to either the Central Valley Project Improvement Act (Public Law 102-575) or the Reclamation Reform Act of 1982, or both, may submit those water conservation plans to satisfy the requirements of Section 10826, if both of the following apply:

(1) The agricultural water supplier has adopted and submitted the water conservation plan to the United States Bureau of Reclamation within the previous four years.

(2) The United States Bureau of Reclamation has accepted the water conservation plan as adequate.

(b) This part does not require agricultural water suppliers that are required to submit water conservation plans to the United States Bureau of Reclamation pursuant to either the Central Valley Project Improvement Act (Public Law 102-575) or the Reclamation Reform Act of 1982, or both, to prepare and adopt water conservation plans according to a schedule that is different from that required by the United States Bureau of Reclamation.

10829. An agricultural water supplier may satisfy the requirements of this part by adopting an urban water management plan pursuant to Part 2.6 (commencing with Section 10610) or by participation in areawide, regional, watershed, or basinwide water management planning if those plans meet or exceed the requirements of this part.

Article 3. Adoption and Implementation of Plans

10840. Every agricultural water supplier shall prepare its plan pursuant to Article 2 (commencing with Section 10825).

10841. Prior to adopting a plan, the agricultural water supplier shall make the proposed plan available for public inspection, and shall hold a public hearing on the plan. Prior to the hearing, notice of the time and place of hearing shall be published within the jurisdiction of the publicly owned agricultural water supplier pursuant to Section 6066 of the Government Code. A privately owned agricultural water supplier shall provide an equivalent notice within its service area and shall provide a reasonably equivalent opportunity that would otherwise be afforded through a public hearing process for interested parties to provide input on the plan. After the hearing, the plan shall be adopted as prepared or as modified during or after the hearing.

10842. An agricultural water supplier shall implement the plan adopted pursuant to this chapter in accordance with the schedule set forth in its plan, as determined by the governing body of the agricultural water supplier.

10843. (a) An agricultural water supplier shall submit to the entities identified in subdivision (b) a copy of its plan no later than 30 days after the adoption of the plan. Copies of amendments or changes to the plans shall be submitted to the entities identified in subdivision (b) within 30 days after the adoption of the amendments or changes.

(b) An agricultural water supplier shall submit a copy of its plan and amendments or changes to the plan to each of the following entities:

(1) The department.

(2) Any city, county, or city and county within which the agricultural water supplier provides water supplies.

(3) Any groundwater management entity within which jurisdiction the agricultural water supplier extracts or provides water supplies.

(4) Any urban water supplier within which jurisdiction the agricultural water supplier provides water supplies.

(5) Any city or county library within which jurisdiction the agricultural water supplier provides water supplies.

(6) The California State Library.

(7) Any local agency formation commission serving a county within which the agricultural water supplier provides water supplies.

10844. (a) Not later than 30 days after the date of adopting its plan, the agricultural water supplier shall make the plan available for public review on the agricultural water supplier's Internet Web site.

(b) An agricultural water supplier that does not have an Internet Web site shall submit to the department, not later than 30 days after the date of adopting its plan, a copy of the adopted plan in an electronic format. The department shall make the plan available for public review on the department's Internet Web site.

10845. (a) The department shall prepare and submit to the Legislature, on or before December 31, 2013, and thereafter in the years ending in six and years ending in one, a report summarizing the status of the plans adopted pursuant to this part.

(b) The report prepared by the department shall identify the outstanding elements of any plan adopted pursuant to this part. The report shall include an evaluation of the effectiveness of this part in promoting efficient agricultural water management practices and recommendations relating to proposed changes to this part, as appropriate.

(c) The department shall provide a copy of the report to each agricultural water supplier that has submitted its plan to the department. The department shall also prepare reports and provide data for any legislative hearing designed to consider the effectiveness of plans submitted pursuant to this part.

(d) This section does not authorize the department, in preparing the report, to approve, disapprove, or critique individual plans submitted pursuant to this part.

Chapter 4. Miscellaneous Provisions

10850. (a) Any action or proceeding to attack, review, set aside, void, or annul the acts or decisions of an agricultural water supplier on the grounds of noncompliance with this part shall be commenced as follows:

(1) An action or proceeding alleging failure to adopt a plan shall be commenced within 18 months after that adoption is required by this part.

(2) Any action or proceeding alleging that a plan, or action taken pursuant to the plan, does not comply with this part shall be commenced within 120 days after submitting the plan or amendments to the plan to entities in accordance with Section 10844 or the taking of that action.

(b) In an action or proceeding to attack, review, set aside, void, or annul a plan, or an action taken pursuant to the plan by an agricultural water supplier, on the grounds of noncompliance with this part, the inquiry shall extend only to whether there was a prejudicial abuse of discretion. Abuse

of discretion is established if the agricultural water supplier has not proceeded in a manner required by law, or if the action by the agricultural water supplier is not supported by substantial evidence.

10851. The California Environmental Quality Act (Division 13 (commencing with Section 21000) of the Public Resources Code) does not apply to the preparation and adoption of plans pursuant to this part. This part does not exempt projects for implementation of the plan or for expanded or additional water supplies from the California Environmental Quality Act.

10852. An agricultural water supplier is not eligible for a water grant or loan awarded or administered by the state unless the supplier complies with this part.

10853. No agricultural water supplier that provides water to less than 25,000 irrigated acres, excluding recycled water, shall be required to implement the requirements of this part or Part 2.55 (commencing with Section 10608) unless sufficient funding has specifically been provided to that water supplier for these purposes.

SEC. 5. This act shall take effect only if Senate Bill 1 and Senate Bill 6 of the 2009–10 Seventh Extraordinary Session of the Legislature are enacted and become effective.

O

Appendix B

DWR UWMP Checklist Organized by Subject

Table I-2 Urban Water Management Plan checklist, organized by subject

No.	UWMP requirement [a]	Calif. Water Code reference	Additional clarification	UWMP location
PLAN PREPARATION				
4	Coordinate the preparation of its plan with other appropriate agencies in the area, including other water suppliers that share a common source, water management agencies, and relevant public agencies, to the extent practicable.	10620(d)(2)		Section 1, Pg. 4-6
6	Notify, at least 60 days prior to the public hearing on the plan required by Section 10642, any city or county within which the supplier provides water that the urban water supplier will be reviewing the plan and considering amendments or changes to the plan. Any city or county receiving the notice may be consulted and provide comments.	10621(b)		Section 1, Pg. 4-5 and Appendix C
7	Provide supporting documentation that the UWMP or any amendments to, or changes in, have been adopted as described in Section 10640 et seq.	10621(c)		Section 1, Pg. 4
54	Provide supporting documentation that the urban water management plan has been or will be provided to any city or county within which it provides water, no later than 60 days after the submission of this urban water management plan.	10635(b)		Section 1, Pg. 4
55	Provide supporting documentation that the water supplier has encouraged active involvement of diverse social, cultural, and economic elements of the population within the service area prior to and during the preparation of the plan.	10642		Appendix C
56	Provide supporting documentation that the urban water supplier made the plan available for public inspection and held a public hearing about the plan. For public agencies, the hearing notice is to be provided pursuant to Section 6066 of the Government Code. The water supplier is to provide the time and place of the hearing to any city or county within which the supplier provides water. Privately-owned water suppliers shall provide an equivalent notice within its service area.	10642		Section 1, Pg. 4 and Appendix C
57	Provide supporting documentation that the plan has been adopted as prepared or modified.	10642	What is the difference between item 7 and 58	Section 1, Pg. 4
58	Provide supporting documentation as to how the water supplier plans to implement its plan.	10643		Section 1, Pg. 5-6

No.	UWMP requirement [a]	Calif. Water Code reference	Additional clarification	UWMP location
59	Provide supporting documentation that, in addition to submittal to DWR, the urban water supplier has submitted this UWMP to the California State Library and any city or county within which the supplier provides water supplies a copy of its plan no later than 30 days after adoption. This also includes amendments or changes.	10644(a)		Section 1, Pg. 4
60	Provide supporting documentation that, not later than 30 days after filing a copy of its plan with the department, the urban water supplier has or will make the plan available for public review during normal business hours	10645		Section 1, Pg. 4
SYSTEM DESCRIPTION				
8	Describe the water supplier service area.	10631(a)		Section 1, Pg. 6
9	Describe the climate and other demographic factors of the service area of the supplier	10631(a)		Section 1, Pg. 6-10
10	Indicate the current population of the service area	10631(a)	Provide the most recent population data possible. Use the method described in "Baseline Daily Per Capita Water Use." See Section M.	Section 1, Pg. 10
11	Provide population projections for 2015, 2020, 2025, and 2030, based on data from State, regional, or local service area population projections.	10631(a)	2035 and 2040 can also be provided to support consistency with Water Supply Assessments and Written Verification of Water Supply documents.	Section 1, Pg. 10
12	Describe other demographic factors affecting the supplier's water management planning.	10631(a)		Section 1, Pg. 10
SYSTEM DEMANDS				
1	Provide baseline daily per capita water use, urban water use target, interim urban water use target, and compliance daily per capita water use, along with the bases for determining those estimates, including references to supporting data.	10608.20(e)		Section 5, Pg. 1 and Appendix E
2	*Wholesalers:* Include an assessment of present and proposed future measures, programs, and policies to help achieve the water use reductions. *Retailers:* Conduct at least one public hearing that includes general discussion of the urban retail water supplier's implementation plan for complying with the Water Conservation Bill of 2009.	10608.36 10608.26(a)	Retailers and wholesalers have slightly different requirements	Appendix C Public Hearing held on June 20, 2011

No.	UWMP requirement [a]	Calif. Water Code reference	Additional clarification	UWMP location
3	Report progress in meeting urban water use targets using the standardized form.	10608.40		Section 5, Pg. 1-2
25	Quantify past, current, and projected water use, identifying the uses among water use sectors, for the following: (A) single-family residential, (B) multifamily, (C) commercial, (D) industrial, (E) institutional and governmental, (F) landscape, (G) sales to other agencies, (H) saline water intrusion barriers, groundwater recharge, conjunctive use, and (I) agriculture.	10631(e)(1)	Consider 'past' to be 2005, present to be 2010, and projected to be 2015, 2020, 2025, and 2030. Provide numbers for each category for each of these years.	Section 6, Pg. 1
33	Provide documentation that either the retail agency provided the wholesale agency with water use projections for at least 20 years, if the UWMP agency is a retail agency, OR, if a wholesale agency, it provided its urban retail customers with future planned and existing water source available to it from the wholesale agency during the required water-year types	10631(k)	Average year, single dry year, multiple dry years for 2015, 2020, 2025, and 2030.	Section 5, Pg. 1-8
34	Include projected water use for single-family and multifamily residential housing needed for lower income households, as identified in the housing element of any city, county, or city and county in the service area of the supplier.	10631.1(a)		Section 5, Pg. 9
SYSTEM SUPPLIES				
13	Identify and quantify the existing and planned sources of water available for 2015, 2020, 2025, and 2030.	10631(b)	The 'existing' water sources should be for the same year as the "current population" in line 10. 2035 and 2040 can also be provided.	Section 2, Pg. 5-6
14	Indicate whether groundwater is an existing or planned source of water available to the supplier. If yes, then complete 15 through 21 of the UWMP Checklist. If no, then indicate "not applicable" in lines 15 through 21 under the UWMP location column.	10631(b)	Source classifications are: surface water, groundwater, recycled water, storm water, desalinated sea water, desalinated brackish groundwater, and other.	Section 2, Pg. 7-14
15	Indicate whether a groundwater management plan been adopted by the water supplier or if there is any other specific authorization for groundwater management. Include a copy of the plan or authorization.	10631(b)(1)		Section 2, Pg. 8 & 11
16	Describe the groundwater basin.	10631(b)(2)		Section 2, Pg. 7-12

No.	UWMP requirement [a]	Calif. Water Code reference	Additional clarification	UWMP location
17	Indicate whether the groundwater basin is adjudicated? Include a copy of the court order or decree.	10631(b)(2)		Section 2, Pg. 8
18	Describe the amount of groundwater the urban water supplier has the legal right to pump under the order or decree. If the basin is not adjudicated, indicate “not applicable” in the UWMP location column.	10631(b)(2)		Not Applicable
19	For groundwater basins that are not adjudicated, provide information as to whether DWR has identified the basin or basins as overdrafted or has projected that the basin will become overdrafted if present management conditions continue, in the most current official departmental bulletin that characterizes the condition of the groundwater basin, and a detailed description of the efforts being undertaken by the urban water supplier to eliminate the long-term overdraft condition. If the basin is adjudicated, indicate “not applicable” in the UWMP location column.	10631(b)(2)		Section 2, Pg. 7-9
20	Provide a detailed description and analysis of the location, amount, and sufficiency of groundwater pumped by the urban water supplier for the past five years	10631(b)(3)		Section 2, Pg. 13-14
21	Provide a detailed description and analysis of the amount and location of groundwater that is projected to be pumped.	10631(b)(4)	Provide projections for 2015, 2020, 2025, and 2030.	Section 2, Pg. 14
24	Describe the opportunities for exchanges or transfers of water on a short-term or long-term basis.	10631(d)		Section 4, Pg. 10-14
30	Include a detailed description of all water supply projects and programs that may be undertaken by the water supplier to address water supply reliability in average, single-dry, and multiple-dry years, excluding demand management programs addressed in (f)(1). Include specific projects, describe water supply impacts, and provide a timeline for each project.	10631(h)		Section 4, Pg. 25-26
31	Describe desalinated water project opportunities for long-term supply, including, but not limited to, ocean water, brackish water, and groundwater.	10631(i)		Section 4, Pg. 27 Pg. 34-35 Pg. 37-39
44	Provide information on recycled water and its potential for use as a water source in the service area of the urban water supplier. Coordinate with local water, wastewater, groundwater, and planning agencies that operate within the supplier's service area.	10633		Section 9, Pg. 1-7
45	Describe the wastewater collection and treatment systems in the supplier's service area, including a quantification of the amount of wastewater collected and treated and the methods of wastewater disposal.	10633(a)		Section 9, Pg. 2-3

No.	UWMP requirement [a]	Calif. Water Code reference	Additional clarification	UWMP location
46	Describe the quantity of treated wastewater that meets recycled water standards, is being discharged, and is otherwise available for use in a recycled water project.	10633(b)		Section 9, Pg. 1
47	Describe the recycled water currently being used in the supplier's service area, including, but not limited to, the type, place, and quantity of use.	10633(c)		Section 9, Pg. 1
48	Describe and quantify the potential uses of recycled water, including, but not limited to, agricultural irrigation, landscape irrigation, wildlife habitat enhancement, wetlands, industrial reuse, groundwater recharge, indirect potable reuse, and other appropriate uses, and a determination with regard to the technical and economic feasibility of serving those uses.	10633(d)		Section 9, Pg. 5
49	The projected use of recycled water within the supplier's service area at the end of 5, 10, 15, and 20 years, and a description of the actual use of recycled water in comparison to uses previously projected.	10633(e)		Section 9, Pg. 5
50	Describe the actions, including financial incentives, which may be taken to encourage the use of recycled water, and the projected results of these actions in terms of acre-feet of recycled water used per year.	10633(f)		Section 9, Pg 5-6
51	Provide a plan for optimizing the use of recycled water in the supplier's service area, including actions to facilitate the installation of dual distribution systems, to promote recirculating uses, to facilitate the increased use of treated wastewater that meets recycled water standards, and to overcome any obstacles to achieving that increased use.	10633(g)		Section 9, Pg. 6-7
WATER SHORTAGE RELIABILITY AND WATER SHORTAGE CONTINGENCY PLANNING [b]				
5	Describe water management tools and options to maximize resources and minimize the need to import water from other regions.	10620(f)		Section 7, Pg. 1-2
22	Describe the reliability of the water supply and vulnerability to seasonal or climatic shortage and provide data for (A) an average water year, (B) a single dry water year, and (C) multiple dry water years.	10631(c)(1)		Section 5, Pg. 1-8
23	For any water source that may not be available at a consistent level of use - given specific legal, environmental, water quality, or climatic factors - describe plans to supplement or replace that source with alternative sources or water demand management measures, to the extent practicable.	10631(c)(2)		Section 4, Pg. 26-39 and Section 7, Pg. 1-2
35	Provide an urban water shortage contingency analysis that specifies stages of action, including up to a 50-percent water supply reduction, and an outline of specific water supply conditions at each stage	10632(a)		Section 8, Pg. 1-5 and Appendix G

No.	UWMP requirement [a]	Calif. Water Code reference	Additional clarification	UWMP location
36	Provide an estimate of the minimum water supply available during each of the next three water years based on the driest three-year historic sequence for the agency's water supply.	10632(b)		Section 8, Pg. 8-9
37	Identify actions to be undertaken by the urban water supplier to prepare for, and implement during, a catastrophic interruption of water supplies including, but not limited to, a regional power outage, an earthquake, or other disaster.	10632(c)		Section 8, Pg. 9-10
38	Identify additional, mandatory prohibitions against specific water use practices during water shortages, including, but not limited to, prohibiting the use of potable water for street cleaning.	10632(d)		Section 8, Pg. 10-11 and Appendix G
39	Specify consumption reduction methods in the most restrictive stages. Each urban water supplier may use any type of consumption reduction methods in its water shortage contingency analysis that would reduce water use, are appropriate for its area, and have the ability to achieve a water use reduction consistent with up to a 50 percent reduction in water supply.	10632(e)		Section 8, Pg. 1-2 and Appendix G
40	Indicated penalties or charges for excessive use, where applicable.	10632(f)		Section 8, Pg. 10-11 and Appendix G
41	Provide an analysis of the impacts of each of the actions and conditions described in subdivisions (a) to (f), inclusive, on the revenues and expenditures of the urban water supplier, and proposed measures to overcome those impacts, such as the development of reserves and rate adjustments.	10632(g)		Section 8, Pg. 11-13
42	Provide a draft water shortage contingency resolution or ordinance.	10632(h)		Section 8, Pg. 13 and Appendix G
43	Indicate a mechanism for determining actual reductions in water use pursuant to the urban water shortage contingency analysis.	10632(i)		Section 8, Pg. 13-14
52	Provide information, to the extent practicable, relating to the quality of existing sources of water available to the supplier over the same five-year increments, and the manner in which water quality affects water management strategies and supply reliability	10634	For years 2010, 2015, 2020, 2025, and 2030	Section 3, Pg. 1-19

No.	UWMP requirement [a]	Calif. Water Code reference	Additional clarification	UWMP location
53	Assess the water supply reliability during normal, dry, and multiple dry water years by comparing the total water supply sources available to the water supplier with the total projected water use over the next 20 years, in five-year increments, for a normal water year, a single dry water year, and multiple dry water years. Base the assessment on the information compiled under Section 10631, including available data from state, regional, or local agency population projections within the service area of the urban water supplier.	10635(a)		Section 5, Pg. 1-8
DEMAND MANAGEMENT MEASURES				
26	Describe how each water demand management measures is being implemented or scheduled for implementation. Use the list provided.	10631(f)(1)	Discuss each DMM, even if it is not currently or planned for implementation. Provide any appropriate schedules.	Section 7, Pg 1-2
27	Describe the methods the supplier uses to evaluate the effectiveness of DMMs implemented or described in the UWMP.	10631(f)(3)		Section 7, Pg 1-2
28	Provide an estimate, if available, of existing conservation savings on water use within the supplier's service area, and the effect of the savings on the ability to further reduce demand.	10631(f)(4)		Section 5, Pg. 10 And Section 8, Pg. 13-14
29	Evaluate each water demand management measure that is not currently being implemented or scheduled for implementation. The evaluation should include economic and non-economic factors, cost-benefit analysis, available funding, and the water suppliers' legal authority to implement the work.	10631(g)	See 10631(g) for additional wording.	Appendix F
32	Include the annual reports submitted to meet the Section 6.2 requirements, if a member of the CUWCC and signer of the December 10, 2008 MOU.	10631(j)	Signers of the MOU that submit the annual reports are deemed compliant with Items 28 and 29.	Appendix F

a The UWMP Requirement descriptions are general summaries of what is provided in the legislation. Urban water suppliers should review the exact legislative wording prior to submitting its UWMP.

b The Subject classification is provided for clarification only. It is aligned with the organization presented in Part I of this guidebook. A water supplier is free to address the UWMP Requirement anywhere with its UWMP, but is urged to provide clarification to DWR to facilitate review.

Appendix C

Notice of Public Hearing and Resolution of Adoption

City of Huntington Beach - Notice of Public Hearing on consideration to adopt an Urban Water Management Plan

Notice is hereby given that a public hearing will be held by the City Council of the City of Huntington Beach, in the Council Chambers of the Huntington Beach Civic Center, located at 2000 Main Street, at the hour of 6:00 PM, or as soon as possible thereafter on Monday, the 20th of June, 2011 for the purpose of considering the adoption of the City's 2010 Urban Water Management Plan.

The 2010 Urban Water Management Plan is submitted to the State Department of Water Resources every five years pursuant to the Urban Water Management Planning Act of 1983. The Plan is a general information document and complements the plan of the Municipal Water District of Orange County and the Metropolitan Water District of Southern California. The purpose of the Urban Water Management Plan is to provide a local perspective and analysis of the current and projected future water supplies and demands and water conservation activities of the City.

Draft copies of the plan will be made available for public review at the Office of the City Clerk and on the City's website at Huntingtonbeachca.gov/hbwater/water-report.pdf. All interested persons are invited to attend the hearing on the 2010 Urban Water Management Plan, to express their opinions for, or against, with written or oral comments. Written communications to the City Council also may be mailed to the City Clerk. Further information may be obtained from the Office of the City Clerk, 2000 Main Street, Huntington Beach, CA 92648 - Phone # (714) 536-5227.

The City of Huntington Beach endeavors to accommodate persons of handicapped status in the admission or access to, or treatment or employment in, City programs or activities. The City of Huntington Beach is an equal opportunity employer.

Joan L. Flynn, City Clerk
City of Huntington Beach
2000 Main Street, 2nd Floor
Huntington Beach, California 92648
Telephone: (714) 536-5227
CityClerkAgenda@surfcity-hb.org
http://www.huntingtonbeachca.gov/

•Published Huntington Beach Independent June 2 & 9, 2011

RESOLUTION NO. _____

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF HUNTINGTON BEACH ADOPTING THE URBAN WATER MANAGEMENT PLAN PURSUANT TO AB 797 AND SB 1011

WHEREAS, Resolution No. 2005-73 adopted the City of Huntington Beach Urban Water Management Plan in 2005; and

Under state regulations, an Urban Water Management Plan is required to be adopted every five years; and

In the semi-arid coastal plain of Southern California, it is imperative that every reasonable measure be taken to manage precious local and imported water supplies; and

A current Urban Water Management Plan ("Plan") has been completed, and is attached hereto as Exhibit "A" and incorporated by this reference as though fully set forth herein, pursuant to the requirements of the Urban Water Management Planning Act of 1983; and

The Plan is a general information document and compliments the plan of the Municipal Water District of Orange County (MWDOC) and the Regional Plan of the Southern California Metropolitan Water District; and

The purpose of Huntington Beach's Plan is to provide a local perspective and analysis of the current and alternative water conservation activities of Huntington Beach; and Huntington Beach's Plan also addresses the effects of water shortages within the City's boundaries and suggests a framework for developing a mechanism, in concert with neighboring cities, to cope with short term as well as chronic water supply deficiencies; and

Huntington Beach's Plan will be periodically updated to reflect changes in water supply trends and conservation policies within the boundaries of Huntington Beach,

NOW, THEREFORE, THE City Council of the City of Huntington Beach does hereby resolve as follows:

1. That the City Council of the City of Huntington Beach hereby acknowledges the essential nature of water conservation within its boundaries as described herein; and

2. That the City's Urban Water Management Plan, as shown on the attached Exhibit "A," is hereby approved and adopted, and the City will implement the Plan as discussed therein.

3. Resolution No. 2005-73 is hereby repealed.

PASSED AND ADOPTED by the City Council of the City of Huntington Beach at a regular meeting thereof held on the _____ day of _____, 20____.

_____
Mayor

REVIEWED AND APPROVED:

_____
City Manager

APPROVED AS TO FORM:

_____
City Attorney

5.12.11

INITIATED AND APPROVED:

_____
Director of Public Works

11-2915/64461

Appendix D

References Used in the Production of this UWMP

City of Huntington Beach

2010 Urban Water Management Plan

REFERENCES

California Department of Public Health, *California's Office of Environmental Health Hazard Assessment*, http://www.cdph.ca.gov/certlic/drinkingwater/Pages/Arsenic.aspx, May 27, 2011

California Irrigation Management Information System, http://www.cimis.water.ca.gov/cimis/frontStationDetailInfo.do?stationId=75&src=info

California Irrigation Management Information System, http://www.cimis.water.ca.gov/cimis/logon.do?forwardURL=/frontMonthlyEToReport&selTab=data, Station 75

California Urban Water Conservation Council, *Memorandum of Understanding Regarding Urban Water Conservation in California (MOU) (September 1991)*, amended December 10, 2008

California Water Desalination Task Force, *Findings and Recommendations*, http://www.water.ca.gov/desalination/pud_pdf/Findings-Recommendations.pdf

Center for Demographic Research, California State University Fullerton

Center for Demographic Research, California State University Fullerton, *Water Use in Orange County*, http://www.fullerton.edu/cdr/profilesv14n1.pdf, March 2009 Profile

City of Huntington Beach, *2005 Financing Plan*

City of Huntington Beach, *2005 Water Master Plan*, March 2006

City of Huntington Beach, *2009 Water Quality Report*

City of Huntington Beach, *Annual Water Quality Report*, http://www.huntingtonbeachca.gov/files/users/public_works/consumer-confidence-report10.pdf, 2010

City of Huntington Beach, *website*, http://www.ci.huntington-beach.ca.us

Department of Water Resources, *Bulletin No. 132-06 and latter supplements to Bulletin No. 13*, http://www.water.ca.gov/swpao/bulletin.cfm

Department of Water Resources, *Bulletin No. 132-05*, http://www.water.ca.gov/swpao/bulletin.cfm, December 2006

Department of Water Resources, *Desalination*, http://www.water.ca.gov/desalination/

Department of Water Resources, *Final Guidebook to Assist Urban Water Suppliers to Prepare a 2010 Urban Water Management Plan, Urban Water Management Plan Checklist, Organized by Subject*, March 2010. http://www.water.ca.gov/urbanwatermanagement/guidebook/

Department of Water Resources, *The California Water Plan*, http://www.waterplan.water.ca.gov/docs/cwpu2009/0310final/v3_southcoast_cwp2009.pdf, 2009 Update

Department of Water Resources, *website*, http://www.water.ca.gov/

Metropolitan Water District, *2010 Regional Urban Water Management Plan*, http://www.mwdh2o.com/mwdh2o/pages/yourwater/RUWMP/RUWMP_2010.pdf, November 9, 2010

Metropolitan Water District, *Annual Budget*, http://www.mwdh2o.com/mwdh2o/pages/finance/budget/AB2011.pdf

Metropolitan Water District, *Colorado River Watershed Sanitary Survey*, 2005 Update

Metropolitan Water District, *Integrated Water Resources Update*, http://www.mwdh2o.com/mwdh2o/pages/yourwater/irp/IRP2010Report.pdf, October 2010

Metropolitan Water District, *Press Release*, February 12, 2008

Metropolitan Water District, *Board Meeting and Press Release: spending plan and adoption of rates and charges*, March 11, 2008

Metropolitan Water District, *Board Meeting and Press Release: new reservoir*, April 8, 2008

Metropolitan Water District, *Service Area*, http://www.mwdh2o.com/mwdh2o/pages/memberag/member03.html

Metropolitan Water District, *Water Supply Allocation Plan*, http://www.mwdh2o.com/mwdh2o/pages/yourwater/RUWMP/RUWMP_2010.pdf, June 2009

Metropolitan Water District, *Water Surplus and Drought Management Plan*, http://www.mwdh2o.com/mwdh2o/pages/yourwater/RUWMP/RUWMP_2010.pdf

Municipal Water District of Orange County, *2010 Regional Urban Water Management Plan*, July 2009

Municipal Water District of Orange County, *Water Educations School Program*, http://www.mwdoc.com/services/school-programs

Municipal Water District of Orange County, *Service Area*, http://www.mwdoc.com/board/service-area

Orange County Sanitary District, *About Us*, http://www.ocsd.com/about/general_information/about_us.asp

Orange County Sanitary District, *Collection System Model and Strategic Plan Update*, http://www.ocsd.com/pdfs/Collection%20System%20Model%20and%20Strategic%20Plan%20Updated.pdf, April 2006

Orange County Water District, *About GWRS*, http://www.gwrsystem.com/about-gwrs.html

Orange County Water District, *Orange County Water District Act Sections 23, 31.5, 77*, February 2002

Orange County Water District, *2008-09 Engineer's Report*

Orange County Water District, *Groundwater Management Plan*, http://www.ocwd.com/Publications---Newsletters/ca-43.aspx, July 9, 2009 Update

Orange County Water District, *Long Term Facilities Plan*, http://www.ocwd.com/_coreModules/common/search.aspx?keywords=Long-Term

Orange County Water District, *website*, http://www.ocwd.com/ca-20.aspx;

Santa Ana Regional Water Quality Control Board, *Notes about the February 2008 Basin Plan Update...*, http://www.swrcb.ca.gov/rwqcb8/water_issues/programs/basin_plan/docs/basin_plan_notes_february_2008_update.pdf

Santa Ana Regional Water Quality Control Board, *Basin Plan Amendment, Resolution No. R8-2004-0001*, http://www.swrcb.ca.gov/rwqcb8/water_issues/programs/basin_plan/docs/bpa_tds/Staff_Report_final.pdf

Santa Ana Regional Water Quality Control Board, *Basin Plan - Triennial Review, Resolution No. R8-2006-0085*, http://www.swrcb.ca.gov/rwqcb8/water_issues/programs/basin_plan/basin_plan_review.shtml

Santa Ana Regional Water Quality Control Board, *Watershed Management Initiative*, May 2004 Revised

State of California, *California Water Code, Division 6, Part 2.6; §10610, et. seq. Established by Assembly Bill 797 (1983)*, amended 2010

State Water Project Contractors Authority, *California State Water Project Watershed Sanitary Survey*, 2006 Update

State Water Resources Control Board, *Santa Ana Region Basin Plan, Chapter 1*, http://www.swrcb.ca.gov/rwqcb8/water_issues/programs/basin_plan/docs/chapter1.pdf

Western Regional Climate Center (WRCC), Desert Research Institute, Reno, Nevada, http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?ca6175

Appendix E

Technical Memorandum on Calculation of SB7x7 Baseline 2020 Targets for Water Conservation Per Capita Use & Development Projections

TECHNICAL MEMORANDUM

To: Ken Dills

From: Mike Swan, Harvey Gobas

Date: March 29, 2011

Subject: 20x2020 Baseline Calculation & Water Use Target Method Selection

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According to the Department of Water Resources (DWR), a water supplier must define a continuous 10 or 15 year base period (baseline) for water use ending no earlier than December 31, 2004 and no later than December 31, 2010 that will be used to develop their per capita water use target for the year 2020 and an interim target for 2015. A water supplier who met at least 10 percent of its 2008 measured retail water demand through recycled water may use a 15-year baseline period; otherwise a supplier must use a 10-year baseline. The City of Huntington Beach met 0.6 percent of its total 2008 water demand through recycled water (indirect reuse through GWRS credit) and, as a result, must use a 10-year baseline.

Table 1 shows the water from the City's own sources, imported, recycled and agricultural water use within the City water service area as well as the gross water use for purposes of determining the per capita consumption. The table also includes population of the water service area and per capita water use from fiscal years (FY) 1996 through FY 2010. Population data used herein is from the Center for Demographic Research at California State University Fullerton as obtained from the Municipal Water District of Orange County (MWDOC) and includes the entire water service area (City of Huntington Beach plus Sunset Beach). Since water use has been trending downward recently even with increasing population, per capita use has been dropping. The most advantageous period for the City to use is the one generating the highest per capita use, making subsequent conservation easier to achieve. Therefore, the 10-year period from FY 1996 thru FY 2005 was determined to be the most advantageous and was used to calculate a baseline per capita water use average of 159.3 GPCD as shown in *Table 1*.

Table 1

City of Huntington Beach Base Daily Per Capita Use

Fiscal Year	Water from Own Sources (AFY)	Imported Water (AFY)	Recycled Water for Indirect Use [1] (AFY)	Agri-cultural Use (AFY)	Gross Water Use [2] (AFY)	Gross Water Use (gal/day)	Water Service Area Population[3]	Annual /Capita Use (GPCD)
1996	26,370	8,729	491	23	34,585	30,873,395	186,944	165.1
1997	26,106	10,181	437		35,850	32,002,637	187,812	170.4
1998	20,003	13,877	316		33,564	29,961,967	188,754	158.7
1999	19,590	16,565	220		35,935	32,078,515	189,697	169.1
2000	20,144	15,254	209		35,189	31,412,574	190,978	164.5
2001	18,254	16,756	220		34,790	31,056,394	193,664	160.4
2002	24,581	10,420	265		34,736	31,008,190	196,072	158.1
2003	14,131	19,378	176		33,333	29,755,757	198,321	150.0
2004	13,188	21,084	184		34,088	30,429,732	199,987	152.2
2005	14,945	17,892	218		32,619	29,118,383	201,068	144.8
2006	19,543	12,369	278		31,634	28,239,091	201,664	140.0
2007	21,795	11,536	264		33,067	29,518,304	201,897	146.2
2008	25,573	6,285	196		31,662	28,264,086	202,319	139.7
2009	21,857	9,773	378		31,252	27,898,087	203,568	137.0
2010	18,271	11,197	1,030		28,438	25,386,081	204,831	123.9
							Baseline (Average FY 1996-2005)	159.3
							Minimum Baseline (Average FY 2004-2008)	144.6

[1] Indirect is recycled water for groundwater recharge through spreading and injection of GWRS (Water Factory 21 prior to FY 2004). The yearly totals are apportioned among the OCWD Basin agencies on the basis of groundwater production over a five year rolling average, per MWDOC.

[2] Gross Water Use = Water from own sources + Imported - Recycled - Agricultural

[3] The Center for Demographic Research, California Sate University Fullerton, including Sunset Beach Population.

A water supplier must set a 2020 water use target and a 2015 interim target using one of the following four methods as defined further in Section 10608.20 of Senate Bill No. 7 (SB7x7):

- Method 1: Eighty percent of the water supplier's baseline per capita water use
- Method 2: Per capita daily water use estimated using the sum of performance standards applied to indoor residential use; landscape area water use; and commercial, industrial, and institutional uses
- Method 3: Ninety-five percent of the applicable state hydrologic region target as stated in the State's April 30, 2009, draft 20x2020 Water Conservations Plan
- Method 4: A BMP Option based on standards that are consistent with the California Urban Water Conservation Council's (CUWCC) best management practices (BMPs).

Calculation of Minimum Targets

If the average base daily per capita water use is greater than 100 GPCD for a defined 5-year baseline period, the legislation's minimum water use reduction requirement must also be met as set in Section 10608.22 of Senate Bill No. 7 SB7x7.

Per SB7x7, the minimum water use reduction baseline period must end no earlier than December 31, 2007 and no later than December 31, 2010 and the minimum reduction shall be no less than 5 percent of this 5-year base daily per capita water use. A minimum water use reduction baseline period between FY 2004 through 2008 was selected to calculate the most advantageous 5-year minimum water use reduction target. As shown in *Table 1,* the minimum baseline water use averages 144.6 GPCD. The minimum per capita water use target for 2020 must therefore be 137.4 GPCD (95% of 144.6).

Calculation of Targets Using Methods 1 – 4

Method 1: Using a baseline per capita average of 159.3 GPCD (shown in Table 1) the City of Huntington Beach 2020 target would be 127.4 GPCD (80% of 159.3). Since the target water use for Method 1 is less than the one found using the legislation's minimum requirement criteria (137.4), no further adjustments to this water use target would be required, if this method is selected.

Method 2: The City of Huntington Beach does not currently maintain records of lot size, irrigated landscaped area for each parcel, reference evapotranspiration for each parcel, etc. to split its residential, commercial, industrial, or institutional uses into inside and outside (landscape irrigation) uses. The use of Method 2 to calculate conservation targets is therefore not feasible.

Method 3: The City of Huntington Beach falls within the South Coast Hydrologic Region (Hydrologic Region 4). According to the State's April 30, 2009 draft 20x2020 Water Conservation Plan, the 2020 Target for Hydrologic Region 4 is 149 GPCD. Using Method 3, the City of Huntington Beach's 2020 water use target would be 141.6 GPCD (95% of 149). Since the target water use generated by Method 3 is greater the one found using the minimum requirement, the water target level needs to be reduced to the minimum target of 137.4 GPCD for 2020, if this method is selected.

Method 4: DWR recently released this method and a calculator for agencies wishing to use this BMP-based method. A default indoor residential water savings of 15 GPCD was assumed and the City of Huntington Beach's 2005 Urban Water Management Plan was referenced to obtain the Commercial, Industrial and Institutional (CII) water use consumption (6,019 AF). Using the midpoint of the baseline period (year 2000) and DWR's "SBX7-7 Provisional Method 4 Target Calculator" resulted in a 2020 water use target of 128.3 GPCD.

Conclusion

The discussion and calculations above are summarized in *Table 2*.

Table 2
City of Huntington Beach
Water Use Target Summary (GPCD)

Method	2020
1	127.4
2	Not Applicable
3	137.4
4	128.3

As shown in *Table 2,* Method 3 results in the most favorable water use target level for the City of Huntington Beach, with the minimum 5-year water use reduction governing. The 2015 interim target would then be 148.4 GPCD (mid-point between baseline of 159.3 and 2020 target of 137.4). It should be noted that the City has met this 2020 target the past two years and the 2015 target the last six years. However, FY 2010 was a water allocation year and 2009 was well publicized to water customers in Southern California as a drought condition. Therefore, demands for these two years should not be considered normal. If gross water use returns to the average of the three years prior to the past two (FY 2006-2008) of 28.7 million gallons per day (32,121 AFY), which could be assumed to be a normal year demand, using the current water service area population of 204,831, the per capita use calculates to 140.0 gallons. Therefore, there would still be some additional conservation, new direct recycled water use, or expanded GWRS use needed to reach the 2020 target, assuming existing population and normal year demands.

City of Huntington Beach
Water Demand Projections

	2010	2015	2020	2025	2030	2035
OCP DEVELOPMENT (excluding B-E & Downtown SPs)						
Residential Single Family Detached (DU)	0	273	242	87	308	5
Residential SFD Demand Factor (gpd/DU)[1]	212	212	212	212	212	212
SFD Sub-total (gpd)	**0**	**57,903**	**51,328**	**18,453**	**65,327**	**1,061**
Other Housing Units	0	682	237	1,036	184	582
Other Housing Demand Factor (gpd/DU)[2]	161	161	161	161	161	161
Other Housing Sub-total (gpd)	**0**	**109,802**	**38,157**	**166,796**	**29,624**	**93,702**
OCP RESIDENTIAL WATER DEMAND (gpd)	**0**	**167,705**	**89,485**	**185,249**	**94,951**	**94,763**
BEACH EDINGER SPECIFIC PLAN						
Residential (DU)	0	0	797	1,918	953	832
Residential Demand Factor (gpd/DU)	140	140	140	140	140	140
Residential Sub-total (gpd)	**0**	**0**	**111,580**	**268,520**	**133,420**	**116,480**
Hotel (Rooms)	0	0	0	200	150	0
Hotel Demand Factor (gpd/DU)	130	130	130	130	130	130
Hotel Sub-total (gpd)	**0**	**0**	**0**	**26,000**	**19,500**	**0**
Office/Retail (sf)	0	53,400	12,600	259,000	281,000	231,000
Office/Retail Demand Factor (gpd/sf)	0.15	0.15	0.15	0.15	0.15	0.15
Office/Retail Sub-total (gpd)	**0**	**8,010**	**1,890**	**38,850**	**42,150**	**34,650**
Landscaping/ROW	0	94,697	94,700	94,700	94,700	94,700
Landscaping/ROW Demand Factor (gpd/sf)	0.01	0.01	0.01	0.01	0.01	0.01
Landscaping/ROW Sub-total (gpd)	**0**	**947**	**947**	**947**	**947**	**947**
Restaurant (sf)	0	22,152	22,152	22,152	22,152	22,512
Restaurant Demand Factor (gpd/sf)	1.5	1.5	1.5	1.5	1.5	1.5
Restaurant Sub-total (gpd)	**0**	**33,228**	**33,228**	**33,228**	**33,228**	**33,768**
BEACH EDINGER SP WATER DEMAND (gpd)	**0**	**42,185**	**147,645**	**367,545**	**229,245**	**185,845**
DOWNTOWN SPECIFIC PLAN						
Residential (DU)	0	0	216	216	216	0
(70 gpcdx2.41 persons/DU)	169	169	169	169	169	169
Residential Sub-total (gpd)	**0**	**0**	**36,439**	**36,439**	**36,439**	**0**
Hotel (Rooms)	0	0	135	100	0	0
(70 gpcdx2.0 persons/room)	140	140	140	140	140	140
Hotel Sub-total (gpd)	**0**	**0**	**18,900**	**14,000**	**0**	**0**
Office/Retail (sf)	0	0	102,084	102,084	102,083	0
Office/Retail Demand Factor (gpd/sf)	0.15	0.15	0.15	0.15	0.15	0.15
Office/Retail Sub-total (gpd)	**0**	**0**	**15,313**	**15,313**	**15,312**	**0**
Cultural Facilities (sf)	0	6,000	6,000	6,000	6,000	6,000
Cultural Facilities Demand Factor (gpd/sf)	0.15	0.15	0.15	0.15	0.15	0.15
Cultural Facilities Sub-total (gpd)	**0**	**900**	**900**	**900**	**900**	**900**
Restaurant (sf)	0	0	30,777	30,777	30,778	0
Restaurant Demand Factor (gpd/sf)	1.5	1.5	1.5	1.5	1.5	1.5
Restaurant Sub-total (gpd)	**0**	**0**	**46,166**	**46,166**	**46,167**	**0**
DOWNTOWN SP WATER DEMAND (gpd)	**0**	**900**	**117,717**	**112,817**	**98,819**	**900**
CITY WATER DEMAND (gpd)	**27,362,075**	**27,572,865**	**27,927,713**	**28,593,324**	**29,016,338**	**29,297,846**
Unaccounted for Water[4]	1,531,352	1,543,149	1,563,008	1,600,260	1,623,934	1,639,689
TOTAL CITY WATER DEMAND (gpd)	**28,893,427**	**29,116,014**	**29,490,721**	**30,193,584**	**30,640,273**	**30,937,535**
TOTAL CITY OF WATER DEMAND (AFY) [3]	**32,367**	**32,616**	**33,036**	**33,823**	**34,324**	**34,657**
Incremental OCP Demand (incl. UAFW)		**177,091**	**94,493**	**195,616**	**100,265**	**100,066**
Incremental DT + B-E Demand (incl. UAFW)		**45,496**	**280,214**	**507,246**	**346,424**	**197,196**
OCP DEMAND	**-**	**177,091**	**271,584**	**467,201**	**567,466**	**667,532**
TOTAL CITY INCLUDING ONLY OCP	**28,893,427**	**29,070,518**	**29,165,011**	**29,360,628**	**29,460,892**	**29,560,958**
TOTAL CITY INCLUDING ONLY OCP (AFY)		**32,565**	**32,671**	**32,890**	**33,003**	**33,115**
DOWNTOWN & B-E SPs DEMAND	**-**	**45,496**	**325,710**	**832,956**	**1,179,380**	**1,376,577**
TOTAL CITY DEMAND	**28,893,427**	**29,116,014**	**29,490,721**	**30,193,584**	**30,640,273**	**30,937,535**

[1] Assumed Residential Single Family Detached Demand Factor is equal to the current OCP factor of (3.03 people/household) x (70 gpcpd).

[2] Assumed Other Housing Demand Factor is equal to the current OCP factor of (2.30 people/household multi-family over 5 units) x (70 gpcpd).

[3] City of Huntington Beach Water Demand for 2010 is equal to the Average Gross Use of 32,367 AF for FY 2006-2008, including recycled water.

[4] 2010 = Total Normal Year Unaccounted Water; Future unacounted water is expected to equal 5.03% of the future development demands (i.e. the average loss percentage over the last five years)

Blue cells at bottom are cumulative, include unaccounted for water (UAFW) and in gpd unless otherwise indicated

Appendix F

CUWCC Best Management Practices Annual Reports,
Coverage Reports, and Activity Reports
2007-2008 & 2009-2010

Accounts & Water Use

Reporting Unit Name:	Submitted to	Year:
City of Huntington Beach	CUWCC **11/18/2008**	**2007**

A. Service Area Population Information:

1. Total service area population 210000

B. Number of Accounts and Water Deliveries (AF)

Type	Metered		Unmetered	
	No. of Accounts	Water Deliveries (AF)	No. of Accounts	Water Deliveries (AF)
1. Single-Family	43960	15715	0	0
2. Multi-Family	4160	6869	0	0
3. Commercial	2317	4415	0	0
4. Industrial	307	893	0	0
5. Institutional	26	258	0	0
6. Dedicated Irrigation	1446	3493	0	0
7. Recycled Water	0	0	0	0
8. Other	0	0	0	0
9. Unaccounted	NA	1671	NA	0
Total	52216	33314	0	0
	Metered		**Unmetered**	

Water Supply & Reuse

Reporting Unit:
City of Huntington Beach

Year:
2007

Water Supply Source Information

Supply Source Name	Quantity (AF) Supplied	Supply Type
ocwd	21782	Groundwater
mwdoc	11533	Imported

Total AF: 33315

BMP 01: Water Survey Programs for Single-Family and Multi-Family Residential Customers

Reporting Unit:	BMP Form Status:	Year:
City of Huntington Beach	**100% Complete**	**2007**

A. Implementation

1. Based on your signed MOU date, 08/23/2000, your Agency STRATEGY DUE DATE is:	08/23/2002
2. Has your agency developed and implemented a targeting/ marketing strategy for SINGLE-FAMILY residential water use surveys?	no
a. If YES, when was it implemented?	
3. Has your agency developed and implemented a targeting/ marketing strategy for MULTI-FAMILY residential water use surveys?	no
a. If YES, when was it implemented?	

B. Water Survey Data

Survey Counts:	**Single Family Accounts**	**Multi-Family Units**
1. Number of surveys offered:	7	0
2. Number of surveys completed:	7	0
Indoor Survey:		
3. Check for leaks, including toilets, faucets and meter checks	no	no
4. Check showerhead flow rates, aerator flow rates, and offer to replace or recommend replacement, if necessary	no	no
5. Check toilet flow rates and offer to install or recommend installation of displacement device or direct customer to ULFT replacement program, as neccesary; replace leaking toilet flapper, as necessary	no	no
Outdoor Survey:		
6. Check irrigation system and timers	yes	no
7. Review or develop customer irrigation schedule	yes	no
8. Measure landscaped area (Recommended but not required for surveys)	yes	no
9. Measure total irrigable area (Recommended but not required for surveys)	yes	no
10. Which measurement method is typically used (Recommended but not required for surveys)	Odometer Wheel	
11. Were customers provided with information packets that included evaluation results and water savings recommendations?	yes	no
12. Have the number of surveys offered and completed, survey results, and survey costs been tracked?	yes	no
a. If yes, in what form are surveys tracked?		database
b. Describe how your agency tracks this information.		

C. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? No

a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

D. Comments

The city did not have a formal program in place during this reporting period. The surveys completed were outdoor only and initiated through high bill complaints.

BMP 02: Residential Plumbing Retrofit

Reporting Unit:	BMP Form Status:	Year:
City of Huntington Beach	**100% Complete**	**2007**

A. Implementation

1. Is there an enforceable ordinance in effect in your service area requiring replacement of high-flow showerheads and other water use fixtures with their low-flow counterparts? no

   a. If YES, list local jurisdictions in your service area and code or ordinance in each:

2. Has your agency satisfied the 75% saturation requirement for single-family housing units? yes

3. Estimated percent of single-family households with low-flow showerheads: 95%

4. Has your agency satisfied the 75% saturation requirement for multi-family housing units? yes

5. Estimated percent of multi-family households with low-flow showerheads: 93%

6. If YES to 2 OR 4 above, please describe how saturation was determined, including the dates and results of any survey research.

In 2000, Orange County's regional wholesaler, the Municipal Water District of Orange County(MWDOC) partnered with MWD of SC and conducted the OC Saturation Survey and found countywide low flow showerhead saturation rates of 66.9% in single family and 59.8% in multifamily dwelling units.Saturation rates provided above represent linear extrapolations of saturation survey results for 06-07 and 07-08.

B. Low-Flow Device Distribution Information

1. Has your agency developed a targeting/ marketing strategy for distributing low-flow devices? no

   a. If YES, when did your agency begin implementing this strategy?

   b. Describe your targeting/ marketing strategy.

Low-Flow Devices Distributed/ Installed	SF Accounts	MF Units
2. Number of low-flow showerheads distributed:	0	0
3. Number of toilet-displacement devices distributed:	0	0
4. Number of toilet flappers distributed:	0	0
5. Number of faucet aerators distributed:	0	0

6. Does your agency track the distribution and cost of low-flow devices? no

   a. If YES, in what format are low-flow devices tracked?

   b. If yes, describe your tracking and distribution system :

C. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? No

   a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

D. Comments

BMP 03: System Water Audits, Leak Detection and Repair

Reporting Unit:	BMP Form Status:	Year:
City of Huntington Beach	**100% Complete**	**2007**

A. Implementation

1. Does your agency own or operate a water distribution system?	yes
2. Has your agency completed a pre-screening system audit for this reporting year?	no
3. If YES, enter the values (AF/Year) used to calculate verifiable use as a percent of total production:	
a. Determine metered sales (AF)	31644
b. Determine other system verifiable uses (AF)	20
c. Determine total supply into the system (AF)	33315
d. Using the numbers above, if (Metered Sales + Other Verifiable Uses) / Total Supply is < 0.9 then a full-scale system audit is required.	0.95
4. Does your agency keep necessary data on file to verify the values entered in question 3?	yes
5. Did your agency complete a full-scale audit during this report year?	no
6. Does your agency maintain in-house records of audit results or completed AWWA M36 audit worksheets for the completed audit which could be forwarded to CUWCC?	yes
7. Does your agency operate a system leak detection program?	no
a. If yes, describe the leak detection program:	

B. Survey Data

1. Total number of miles of distribution system line.	621
2. Number of miles of distribution system line surveyed.	0

C. "At Least As Effective As"

1. Is your agency implementing an "at least as effective as" variant of this BMP?	No
a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."	

D. Comments

Please note: the miles of distribution system line reported has increased significantly over previous reporting periods. This is due to an ongoing effort to update records. A limited amount of new pipeline has been installed.

Voluntary Questions (Not used to calculate compliance)

E. Volumes

	Estimated	Verified
1. Volume of raw water supplied to the system:		
2. Volume treated water supplied into the system:		
3. Volume of water exported from the system:		
4. Volume of billed authorized metered consumption:		
5. Volume of billed authorized unmetered consumption:		
6. Volume of unbilled authorized metered consumption:		
7. Volume of unbilled authorized unmetered consumption:		

F. Infrastructure and Hydraulics

1. System input (source or master meter) volumes metered at the entry to the:
2. How frequently are they tested and calibrated?
3. Length of mains:
4. What % of distribution mains are rigid pipes (metal, ac, concrete)?
5. Number of service connections:
6. What % of service connections are rigid pipes (metal)?
7. Are residential properties fully metered?
8. Are non-residential properties fully metered?
9. Provide an estimate of customer meter under-registration:
10. Average length of customer service line from the main to the point of the meter:
11. Average system pressure:
12. Range of system pressures: From to
13. What percentage of the system is fed from gravity feed?
14. What percentage of the system is fed by pumping and re-pumping?

G. Maintenance Questions

1. Who is responsible for providing, testing, repairing and replacing customer meters?
2. Does your agency test, repair and replace your meters on a regular timed schedule?
    a. If yes, does your agency test by meter size or customer category?:
    b. If yes to meter size, please provide the frequency of testing by meter size:
        Less than or equal to 1"

1.5" to 2"

3" and Larger

c. If yes to customer category, provide the frequency of testing by customer category:

SF residential

MF residential

Commercial

Industrial & Institutional

3. Who is responsible for repairs to the customer lateral or customer service line?

4. Who is responsible for service line repairs downstream of the customer meter?

5. Does your agency proactively search for leaks using leak survey techniques or does your utility reactively repair leaks which are called in, or both?

6. What is the utility budget breakdown for:

Leak Detection	$
Leak Repair	$
Auditing and Water Loss Evaluation	$
Meter Testing	$

H. Comments

BMP 04: Metering with Commodity Rates for all New Connections and Retrofit of Existing

Reporting Unit:	BMP Form Status:	Year:
City of Huntington Beach	**100% Complete**	**2007**

A. Implementation

1. Does your agency have any unmetered service connections? No

   a. If YES, has your agency completed a meter retrofit plan? No

   b. If YES, number of previously unmetered accounts fitted with meters during report year: 0

2. Are all new service connections being metered and billed by volume of use? Yes

3. Are all new service connections being billed volumetrically with meters? Yes

4. Has your agency completed and submitted electronically to the Council a written plan, policy or program to test, repair and replace meters? Yes

5. Please fill out the following matrix:

Account Type	Number of Metered Accounts	Number of Metered Accounts Read	Number of Metered Accounts Billed by Volume	Billing Frequency Per Year	Number of Volume Estimates
a. Single Family	43960	43960	43960	12	0
b. Multi-Family	4160	4160	4160	12	0
c. Commercial	2317	2317	2317	12	0
d. Industrial	307	307	307	12	0
e. Institutional	26	26	26	12	0
f. Landscape Irrigation	1446	1446	1446	12	0

B. Feasibility Study

1. Has your agency conducted a feasibility study to assess the merits of a program to provide incentives to switch mixed-use accounts to dedicated landscape meters? no

   a. If YES, when was the feasibility study conducted? (mm/dd/yy)

   b. Describe the feasibility study:

2. Number of CII accounts with mixed-use meters: 0

3. Number of CII accounts with mixed-use meters retrofitted with dedicated irrigation meters during reporting period. 0

C. "At Least As Effective As"

1. Is your agency implementing an "at least as effective as" variant of this BMP? No

   a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

D. Comments

The city does not have records identifying mixed use meters. All new CII installations are required to install dedicated irrigation meters.

BMP 05: Large Landscape Conservation Programs and Incentives

Reporting Unit:	BMP Form Status:	Year:
City of Huntington Beach	**100% Complete**	**2007**

A. Water Use Budgets

1. Number of Dedicated Irrigation Meter Accounts:	1446
2. Number of Dedicated Irrigation Meter Accounts with Water Budgets:	0
3. Budgeted Use for Irrigation Meter Accounts with Water Budgets (AF) during reporting year:	0
4. Actual Use for Irrigation Meter Accounts with Water Budgets (AF) during reporting year:	0
5. Does your agency provide water use notices to accounts with budgets each billing cycle?	no

B. Landscape Surveys

1. Has your agency developed a marketing / targeting strategy for landscape surveys?	no
a. If YES, when did your agency begin implementing this strategy?	
b. Description of marketing / targeting strategy:	
2. Number of Surveys Offered during reporting year.	10
3. Number of Surveys Completed during reporting year.	10
4. Indicate which of the following Landscape Elements are part of your survey:	
a. Irrigation System Check	yes
b. Distribution Uniformity Analysis	yes
c. Review / Develop Irrigation Schedules	yes
d. Measure Landscape Area	yes
e. Measure Total Irrigable Area	yes
f. Provide Customer Report / Information	yes
5. Do you track survey offers and results?	yes
6. Does your agency provide follow-up surveys for previously completed surveys?	no
a. If YES, describe below:	

C. Other BMP 5 Actions

1. An agency can provide mixed-use accounts with ETo-based landscape budgets in lieu of a large landscape survey program. Does your agency provide mixed-use accounts with landscape budgets?	no
2. Number of CII mixed-use accounts with landscape budgets.	0
Number of CII accounts with mixed-use meters retrofitted with dedicated irrigation meters during reporting period. (From BMP 4 report)	0
Total number of change-outs from mixed-use to dedicated	

irrigation meters since Base Year.

3. Do you offer landscape irrigation training? yes

4. Does your agency offer financial incentives to improve landscape water use efficiency? yes

Type of Financial Incentive:	Budget (Dollars/ Year)	Number Awarded to Customers	Total Amount Awarded
a. Rebates	3000	12	2900
b. Loans	0	0	0
c. Grants	0	0	0

5. Do you provide landscape water use efficiency information to new customers and customers changing services? No

a. If YES, describe below:

6. Do you have irrigated landscaping at your facilities? yes

a. If yes, is it water-efficient? yes

b. If yes, does it have dedicated irrigation metering? yes

7. Do you provide customer notices at the start of the irrigation season? no

8. Do you provide customer notices at the end of the irrigation season? no

D. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? No

a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

E. Comments

BMP 06: High-Efficiency Washing Machine Rebate Programs

Reporting Unit: **City of Huntington Beach**

BMP Form Status: **100% Complete**

Year: **2007**

A. Coverage Goal

	Single Family	Multi-Family
1. Number of **residential** dwelling units in the agency service area.	43,958	35,467
2. Coverage Goal =	**= 6,100 Points**	

B. Implementation

1. Does your agency offer rebates for **residential** high-efficiency washers? yes

HEW Water Factor	Number of Financial Incentives Issued	Total Value of Financial Incentives: Retail Water Agency	Wholesaler/ Grants (if applicable)	Energy Utility (if applicable)	TOTAL	POINTS AWARDED
2. **Greater than 8.5 but not exceeding 9.5** (1 point)	0	$ 0	$ 0	$ 0	$ 0	0
3. **Greater than 6.0 but not exceeding 8.5** (2 points)	0	$ 0	$ 0	$ 0	$ 0	0
4. **Less than or equal to 6.0** (3 points)	761	$ 0	$ 76,100	$ 0	$ 76,100	2283
TOTALS:	**761**	**$ 0**	**$ 76,100**	**$ 0**	**$ 76,100**	**2,283**

C. Past Credit Points

For HEW incentives issued before July 1, 2004, select ONE of the following TWO options:

- Method One: Points based on HEW Water Factor
- Method Two: Agency earns 1 point for each HEW.

Method Two: Agency earns 1 point for each HEW

	Number of Financial Incentives Issued	Total Value of Water Agency Financial Incentives	POINTS AWARDED
4. **Total HEWs installed**	1457	$ 145,700	1457
PAST CREDIT TOTALS:	**1457**	**$ 145,700**	**1,457**

D. Rebate Program Expenditures

1. Average or Estimated Administration and Overhead	$ 1,436
2. Is the financial incentive offered per HEW at least equal to the marginal benefits of the water savings per HEW?	yes

E. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP?	no

a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

F. Comments

BMP 07: Public Information Programs

Reporting Unit:	BMP Form Status:	Year:
City of Huntington Beach	**100% Complete**	**2007**

A. Implementation

1. How is your public information program implemented?
   Wholesaler implements program (none or minimal retailer participation)

Which wholesaler(s)?
Municipal Water District of Orange County and Metropolitan Water District of Southern California.

Public Information Program Activity Reported By Wholesaler

BMP 08: School Education Programs

Reporting Unit:	BMP Form Status:	Year:
City of Huntington Beach	**100% Complete**	**2007**

A. Implementation

1. How is your public information program implemented?
   Wholesaler implements program (none or minimal retailer participation)
   Which wholesaler(s)?
   Municipal Water District of Orange County.

Public Information Program Activity Reported By Wholesaler

BMP 09: Conservation Programs for CII Accounts

Reporting Unit:	BMP Form Status:	Year:
City of Huntington Beach	**100% Complete**	**2007**

A. Implementation

1. Has your agency identified and ranked COMMERCIAL customers according to use?	no
2. Has your agency identified and ranked INDUSTRIAL customers according to use?	yes
3. Has your agency identified and ranked INSTITUTIONAL customers according to use?	yes

Option A: CII Water Use Survey and Customer Incentives Program

4. Is your agency operating a CII water use survey and customer incentives program for the purpose of complying with BMP 9 under this option? If so, please describe activity during reporting period: yes

CII Surveys	Commercial Accounts	Industrial Accounts	Institutional Accounts
a. Number of New Surveys Offered	0	2	0
b. Number of New Surveys Completed	0	0	0
c. Number of Site Follow-ups of Previous Surveys (within 1 yr)	0	0	0
d. Number of Phone Follow-ups of Previous Surveys (within 1 yr)	0	0	0

CII Survey Components	Commercial Accounts	Industrial Accounts	Institutional Accounts
e. Site Visit	no	no	no
f. Evaluation of all water-using apparatus and processes	no	no	no
g. Customer report identifying recommended efficiency measures, paybacks and agency incentives	no	no	no

Agency CII Customer Incentives	Budget ($/Year)	# Awarded to Customers	Total $ Amount Awarded
h. Rebates	0	0	0
i. Loans	0	0	0
j. Grants	0	0	0
k. Others	0	0	0

Option B: CII Conservation Program Targets

5. Does your agency track CII program interventions and water savings for the purpose of complying with BMP 9 under this option?	yes
6. Does your agency document and maintain records on how savings were realized and the method of calculation for estimated savings?	yes

7. **System Calculated** annual savings (AF/yr):

CII Programs	# Device Installations
a. Ultra Low Flush Toilets	108
b. Dual Flush Toilets	0
c. High Efficiency Toilets	28
d. High Efficiency Urinals	0
e. Non-Water Urinals	15
f. Commercial Clothes Washers (coin-op only; not industrial)	0
g. Cooling Tower Controllers	0
h. Food Steamers	0
i. Ice Machines	0
j. Pre-Rinse Spray Valves	0
k. Steam Sterilizer Retrofits	0
l. X-ray Film Processors	0

8. **Estimated** annual savings (AF/yr) from agency programs not including the devices listed in Option B. 7., above:

CII Programs	Annual Savings (AF/yr)
a. Site-verified actions taken by agency:	0
b. Non-site-verified actions taken by agency:	0

B. Conservation Program Expenditures for CII Accounts

	This Year	Next Year
1. Budgeted Expenditures	0	0
2. Actual Expenditures	0	

C. "At Least As Effective As"

1. Is your agency implementing an "at least as effective as" variant of this BMP? No

a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

D. Comments

The city of Huntington Beach participates in a regional CII Rebate Program facilitated by our regional wholesaler, MWD of Southern California. We do not directly contribute financially to the program, but we do contribute through the water rates paid to MWDOC. MWD will report regional budget and total amount awarded values on our behalf.

BMP 11: Conservation Pricing

Reporting Unit:	BMP Form Status:	Year:
City of Huntington Beach	**100% Complete**	**2007**

A. Implementation

Water Service Rate Structure Data by Customer Class

1. Single Family Residential	
a. Rate Structure	Uniform
b. Total Revenue from Commodity Charges (Volumetric Rates)	$ 9,906,858
c. Total Revenue from Customer Meter/Service (Fixed) Charges	$ 8,138,108
2. Multi-Family Residential	
a. Rate Structure	Uniform
b. Total Revenue from Commodity Charges (Volumetric Rates)	$ 4,330,290
c. Total Revenue from Customer Meter/Service (Fixed) Charges	$ 5,876,191
3. Commercial	
a. Rate Structure	Uniform
b. Total Revenue from Commodity Charges (Volumetric Rates)	$ 2,783,356
c. Total Revenue from Customer Meter/Service (Fixed) Charges	$ 2,128,698
4. Industrial	
a. Rate Structure	Uniform
b. Total Revenue from Commodity Charges (Volumetric Rates)	$ 562,800
c. Total Revenue from Customer Meter/Service (Fixed) Charges	$ 303,132
5. Institutional / Government	
a. Rate Structure	Uniform
b. Total Revenue from Commodity Charges (Volumetric Rates)	$ 162,949
c. Total Revenue from Customer Meter/Service (Fixed) Charges	$ 108,427
6. Dedicated Irrigation (potable)	
a. Rate Structure	Uniform
b. Total Revenue from Commodity Charges (Volumetric Rates)	$ 2,054,978
c. Total Revenue from Customer Meter/Service (Fixed) Charges	$ 840,471
7. Recycled-Reclaimed	
a. Rate Structure	Service Not Provided
b. Total Revenue from Commodity Charges (Volumetric Rates)	$ 0
c. Total Revenue from Customer Meter/Service (Fixed) Charges	$ 0

8. Raw

a. Rate Structure	Service Not Provided
b. Total Revenue from Commodity Charges (Volumetric Rates)	$ 0
c. Total Revenue from Customer Meter/Service (Fixed) Charges	$ 0

9. Other

a. Rate Structure	Service Not Provided
b. Total Revenue from Commodity Charges (Volumetric Rates)	$ 0
c. Total Revenue from Customer Meter/Service (Fixed) Charges	$ 0

B. Implementation Options

Select Either Option 1 or Option 2:

1. Option 1: Use Annual Revenue As Reported

V/(V+M) >= 70%

V = Total annual revenue from volumetric rates

M = Total annual revenue from customer meter/service (fixed) charges

Selected

2. Option 2: Use Canadian Water & Wastewater Association Rate Design Model

V/(V+M) >= V'/(V'+M')

V = Total annual revenue from volumetric rates

M = Total annual revenue from customer meter/service (fixed) charges

V' = The uniform volume rate based on the signatory's long-run incremental cost of service

M' = The associated meter charge

a. If you selected Option 2, has your agency submitted to the Council a completed Canadian Water & Wastewater Association rate design model?

b. Value for **V'** (uniform volume rate based on agency's long-run incremental cost of service) as determined by the Canadian Water & Wastewater Association rate design model:

c. Value for **M'** (meter charge associated with V' uniform volume rate) as determined by the Canadian Water & Wastewater Association rate design model:

C. Retail Wastewater (Sewer) Rate Structure Data by Customer Class

1. Does your agency provide sewer service? (If YES, answer questions 2 - 7 below, else continue to section D.) yes

2. Single Family Residential

a. Sewer Rate Structure	Non-volumetric Flat Rate
b. Total Annual Revenue	$ 5,130,000
c. Total Revenue from Commodity Charges (Volumetric Rates)	$ 0

3. Multi-Family Residential

a. Sewer Rate Structure	Non-volumetric Flat Rate
b. Total Annual Revenue	$ 2,940,000
c. Total Revenue from Commodity Charges (Volumetric Rates)	$ 0

4. Commercial

a. Sewer Rate Structure	Non-volumetric Flat Rate
b. Total Annual Revenue	$ 1,880,000
c. Total Revenue from Commodity Charges (Volumetric Rates)	$ 0

5. Industrial

a. Sewer Rate Structure	Non-volumetric Flat Rate
b. Total Annual Revenue	$ 0
c. Total Revenue from Commodity Charges (Volumetric Rates)	$ 0

6. Institutional / Government

a. Sewer Rate Structure	Non-volumetric Flat Rate
b. Total Annual Revenue	$ 600,000
c. Total Revenue from Commodity Charges (Volumetric Rates)	$ 0

7. Recycled-reclaimed water

a. Sewer Rate Structure	Service Not Provided
b. Total Annual Revenue	$ 0
c. Total Revenue from Commodity Charges (Volumetric Rates)	$ 0

D. "At Least As Effective As"

1. Is your agency implementing an "at least as effective as" variant of this BMP? No

a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

E. Comments

The Industrial Revenue is included in the Commercial Annual Revenue Requirement.

BMP 12: Conservation Coordinator

Reporting Unit:	BMP Form Status:	Year:
City of Huntington Beach	**100% Complete**	**2007**

A. Implementation

1. Does your Agency have a conservation coordinator?	yes
2. Is a coordinator position supplied by another agency with which you cooperate in a regional conservation program ?	yes
a. Partner agency's name:	MWDOC
3. If your agency supplies the conservation coordinator:	
a. What percent is this conservation coordinator's position?	5%
b. Coordinator's Name	Kenneth J. Dills
c. Coordinator's Title	Principal Administrative Analyst
d. Coordinator's Experience in Number of Years	Level I Water Conservation Practitioner - 9 years
e. Date Coordinator's position was created (mm/dd/yyyy)	03/01/1999
4. Number of conservation staff (FTEs), including Conservation Coordinator.	1

B. Conservation Staff Program Expenditures

1. Staffing Expenditures (In-house Only)	6000
2. BMP Program Implementation Expenditures	15000

C. "At Least As Effective As"

1. Is your agency implementing an "at least as effective as" variant of this BMP?	no

a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

D. Comments

BMP 13: Water Waste Prohibition

Reporting Unit:	BMP Form Status:	Year:
City of Huntington Beach	**100% Complete**	**2007**

A. Requirements for Documenting BMP Implementation

1. Is a water waste prohibition ordinance in effect in your service area? yes

   a. If YES, describe the ordinance:

   14.16.020 of the Huntington Beach Municipal Code states that no person shall waste water or allow it to be wasted from improper fixtures.

2. Is a copy of the most current ordinance(s) on file with CUWCC? yes

   a. List local jurisdictions in your service area in the first text box and water waste ordinance citations in each jurisdiction in the second text box:

   N/A N/A

B. Implementation

1. Indicate which of the water uses listed below are prohibited by your agency or service area.

   a. Gutter flooding yes

   b. Single-pass cooling systems for new connections no

   c. Non-recirculating systems in all new conveyor or car wash systems no

   d. Non-recirculating systems in all new commercial laundry systems no

   e. Non-recirculating systems in all new decorative fountains no

   f. Other, please name no

2. Describe measures that prohibit water uses listed above:

   Visual inspections and citations where warranted

Water Softeners:

3. Indicate which of the following measures your agency has supported in developing state law:

   a. Allow the sale of more efficient, demand-initiated regenerating DIR models. yes

   b. Develop minimum appliance efficiency standards that:

      i.) Increase the regeneration efficiency standard to at least 3,350 grains of hardness removed per pound of common salt used. yes

      ii.) Implement an identified maximum number of gallons discharged per gallon of soft water produced. yes

   c. Allow local agencies, including municipalities and special districts, to set more stringent standards and/or to ban on-site regeneration of water softeners if it is demonstrated and found by the agency governing board that there is an adverse effect on the reclaimed water or groundwater supply. yes

4. Does your agency include water softener checks in home water audit programs? yes

5. Does your agency include information about DIR and exchange-type water softeners in educational efforts to encourage replacement no

of less efficient timer models?

C. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? no

a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

D. Comments

Any expenditures are not tracked separately

BMP 14: Residential ULFT Replacement Programs

Reporting Unit:	BMP Form Status:	Year:
City of Huntington Beach	**100% Complete**	**2007**

A. Implementation

Number of Non-Efficient Toilets Replaced With 1.6 gpf Toilets During Report Year

	Single-Family Accounts	Multi-Family Units
1. Does your Agency have program(s) for replacing high-water-using toilets with ultra-low flush toilets?	yes	yes
Replacement Method	**SF Accounts**	**MF Units**
2. Rebate	132	11
3. Direct Install	0	0
4. CBO Distribution	0	0
5. Other	0	0
Total	**132**	**11**

Number of Non-Efficient Toilets Replaced With 1.28 gpf High-Efficiency Toilets (HETs) During Report Year

	Single-Family Accounts	Multi-Family Units
6. Does your Agency have program(s) for replacing high-water-using toilets with ultra-low flush toilets?	yes	yes
Replacement Method	**SF Accounts**	**MF Units**
7. Rebate	3	0
8. Direct Install	0	0
9. CBO Distribution	0	0
10. Other	0	0
Total	**3**	**0**

Number of Non-Efficient Toilets Replaced With 1.2 gpf HETs (Dual-Flush) During Report Year

	Single-Family Accounts	Multi-Family Units
11. Does your Agency have program(s) for replacing high-water-using toilets with ultra-low flush toilets?	yes	yes
Replacement Method	**SF Accounts**	**MF Units**
12. Rebate	10	0
13. Direct Install	0	0
14. CBO Distribution	0	0
15. Other	0	0
Total	**10**	**0**

16. Describe your agency's ULFT, HET, and/or Dual-Flush Toilet programs for single-family residences.

Huntington Beach participates in a region wide ULFT rebate program for both SF and MF. Our regional wholesaler, MWDOC admiinisters the program on our behalf. They contract with a vendor to market the program and facilitate the rebate process for our customers.

17. Describe your agency's ULFT, HET, and/or Dual-Flush Toilet programs for multi-family residences.

See #16

18. Is a toilet retrofit on resale ordinance in effect for your service area? no

19. List local jurisdictions in your service area in the left box and ordinance citations in each jurisdiction in the right box:

N/A	N/A

B. Residential ULFT Program Expenditures

1. Estimated cost per replacement: $ 0

C. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? no

a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

D. Comments

Accounts & Water Use

Reporting Unit Name:	Form Status:	Year:
City of Huntington Beach	**100% Complete**	**2008**

A. Service Area Population Information:

1. Total service area population 210000

B. Number of Accounts and Water Deliveries (AF)

Type	Metered		Unmetered	
	No. of Accounts	Water Deliveries (AF)	No. of Accounts	Water Deliveries (AF)
1. Single-Family	44060	15144	0	0
2. Multi-Family	4120	6704	0	0
3. Commercial	2322	4206	0	0
4. Industrial	307	888	0	0
5. Institutional	89	300	0	0
6. Dedicated Irrigation	1427	3455	0	0
7. Recycled Water	0	0	0	0
8. Other	0	0	0	0
9. Unaccounted	NA	1160	NA	0
Total	52325	31857	0	0
	Metered		**Unmetered**	

Water Supply & Reuse

Reporting Unit: **City of Huntington Beach**

Year: **2008**

Water Supply Source Information

Supply Source Name	Quantity (AF) Supplied	Supply Type
OCWD	25578 2	Groundwater
MWDOC	6285	Imported

Total AF: ~~31858~~

31857

BMP 01: Water Survey Programs for Single-Family and Multi-Family Residential Customers

Reporting Unit:	BMP Form Status:	Year:
City of Huntington Beach	**100% Complete**	**2008**

A. Implementation

1. Based on your signed MOU date, 08/23/2000, your Agency STRATEGY DUE DATE is:	08/23/2002
2. Has your agency developed and implemented a targeting/ marketing strategy for SINGLE-FAMILY residential water use surveys?	no
a. If YES, when was it implemented?	
3. Has your agency developed and implemented a targeting/ marketing strategy for MULTI-FAMILY residential water use surveys?	no
a. If YES, when was it implemented?	

B. Water Survey Data

Survey Counts:	Single Family Accounts	Multi-Family Units
1. Number of surveys offered:	1	0
2. Number of surveys completed:	1	0
Indoor Survey:		
3. Check for leaks, including toilets, faucets and meter checks	no	no
4. Check showerhead flow rates, aerator flow rates, and offer to replace or recommend replacement, if necessary	no	no
5. Check toilet flow rates and offer to install or recommend installation of displacement device or direct customer to ULFT replacement program, as neccesary; replace leaking toilet flapper, as necessary	no	no
Outdoor Survey:		
6. Check irrigation system and timers	yes	no
7. Review or develop customer irrigation schedule	yes	no
8. Measure landscaped area (Recommended but not required for surveys)	yes	no
9. Measure total irrigable area (Recommended but not required for surveys)	yes	no
10. Which measurement method is typically used (Recommended but not required for surveys)	Odometer Wheel	
11. Were customers provided with information packets that included evaluation results and water savings recommendations?	yes	no
12. Have the number of surveys offered and completed, survey results, and survey costs been tracked?	yes	no
a. If yes, in what form are surveys tracked?	database	
b. Describe how your agency tracks this information.		

C. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? No

a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

D. Comments

BMP 02: Residential Plumbing Retrofit

Reporting Unit:	BMP Form Status:	Year:
City of Huntington Beach	**100% Complete**	**2008**

A. Implementation

1. Is there an enforceable ordinance in effect in your service area requiring replacement of high-flow showerheads and other water use fixtures with their low-flow counterparts? — no

   a. If YES, list local jurisdictions in your service area and code or ordinance in each:

2. Has your agency satisfied the 75% saturation requirement for single-family housing units? — yes

3. Estimated percent of single-family households with low-flow showerheads: — 96%

4. Has your agency satisfied the 75% saturation requirement for multi-family housing units? — yes

5. Estimated percent of multi-family households with low-flow showerheads: — 95%

6. If YES to 2 OR 4 above, please describe how saturation was determined, including the dates and results of any survey research.

In 2000, Orange County's regional wholesaler, the Municipal Water District of Orange County(MWDOC)partnered with MWD of SC and conducted the OC Saturation Survey and found countywide low flow showerhead saturation rates of 66.9% in single family and 59.8% in multifamily dwelling units. Saturation rates provided above represent linear extrapolations of saturation survey results for 06-07 and 07-08.

B. Low-Flow Device Distribution Information

1. Has your agency developed a targeting/ marketing strategy for distributing low-flow devices? — no

   a. If YES, when did your agency begin implementing this strategy?

   b. Describe your targeting/ marketing strategy.

Low-Flow Devices Distributed/ Installed	SF Accounts	MF Units
2. Number of low-flow showerheads distributed:	0	0
3. Number of toilet-displacement devices distributed:	0	0
4. Number of toilet flappers distributed:	0	0
5. Number of faucet aerators distributed:	0	0

6. Does your agency track the distribution and cost of low-flow devices? — no

   a. If YES, in what format are low-flow devices tracked?

   b. If yes, describe your tracking and distribution system :

C. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? — No

   a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

D. Comments

BMP 03: System Water Audits, Leak Detection and Repair

Reporting Unit:	BMP Form Status:	Year:
City of Huntington Beach	**100% Complete**	**2008**

A. Implementation

1. Does your agency own or operate a water distribution system?	yes
2. Has your agency completed a pre-screening system audit for this reporting year?	no
3. If YES, enter the values (AF/Year) used to calculate verifiable use as a percent of total production:	
a. Determine metered sales (AF)	30697
b. Determine other system verifiable uses (AF)	20
c. Determine total supply into the system (AF)	31857
d. Using the numbers above, if (Metered Sales + Other Verifiable Uses) / Total Supply is < 0.9 then a full-scale system audit is required.	0.96
4. Does your agency keep necessary data on file to verify the values entered in question 3?	yes
5. Did your agency complete a full-scale audit during this report year?	no
6. Does your agency maintain in-house records of audit results or completed AWWA M36 audit worksheets for the completed audit which could be forwarded to CUWCC?	yes
7. Does your agency operate a system leak detection program?	no
a. If yes, describe the leak detection program:	

B. Survey Data

1. Total number of miles of distribution system line.	621
2. Number of miles of distribution system line surveyed.	0

C. "At Least As Effective As"

1. Is your agency implementing an "at least as effective as" variant of this BMP?	No
a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."	

D. Comments

Voluntary Questions (Not used to calculate compliance)

E. Volumes

	Estimated	Verified
1. Volume of raw water supplied to the system:		
2. Volume treated water supplied into the system:		
3. Volume of water exported from the system:		
4. Volume of billed authorized metered consumption:		
5. Volume of billed authorized unmetered consumption:		
6. Volume of unbilled authorized metered consumption:		
7. Volume of unbilled authorized unmetered consumption:		

F. Infrastructure and Hydraulics

1. System input (source or master meter) volumes metered at the entry to the:
2. How frequently are they tested and calibrated?
3. Length of mains:
4. What % of distribution mains are rigid pipes (metal, ac, concrete)?
5. Number of service connections:
6. What % of service connections are rigid pipes (metal)?
7. Are residential properties fully metered?
8. Are non-residential properties fully metered?
9. Provide an estimate of customer meter under-registration:
10. Average length of customer service line from the main to the point of the meter:
11. Average system pressure:
12. Range of system pressures: From to
13. What percentage of the system is fed from gravity feed?
14. What percentage of the system is fed by pumping and re-pumping?

G. Maintenance Questions

1. Who is responsible for providing, testing, repairing and replacing customer meters?
2. Does your agency test, repair and replace your meters on a regular timed schedule?
    a. If yes, does your agency test by meter size or customer category?:
    b. If yes to meter size, please provide the frequency of testing by meter size:
        Less than or equal to 1"

1.5" to 2"

3" and Larger

c. If yes to customer category, provide the frequency of testing by customer category:

SF residential

MF residential

Commercial

Industrial & Institutional

3. Who is responsible for repairs to the customer lateral or customer service line?

4. Who is responsible for service line repairs downstream of the customer meter?

5. Does your agency proactively search for leaks using leak survey techniques or does your utility reactively repair leaks which are called in, or both?

6. What is the utility budget breakdown for:

Leak Detection	$
Leak Repair	$
Auditing and Water Loss Evaluation	$
Meter Testing	$

H. Comments

BMP 04: Metering with Commodity Rates for all New Connections and Retrofit of Existing

Reporting Unit:	BMP Form Status:	Year:
City of Huntington Beach	**100% Complete**	**2008**

A. Implementation

1. Does your agency have any unmetered service connections? No
   - a. If YES, has your agency completed a meter retrofit plan? No
   - b. If YES, number of previously unmetered accounts fitted with meters during report year: 0
2. Are all new service connections being metered and billed by volume of use? Yes
3. Are all new service connections being billed volumetrically with meters? Yes
4. Has your agency completed and submitted electronically to the Council a written plan, policy or program to test, repair and replace meters? Yes
5. Please fill out the following matrix:

Account Type	Number of Metered Accounts	Number of Metered Accounts Read	Number of Metered Accounts Billed by Volume	Billing Frequency Per Year	Number of Volume Estimates
a. Single Family	44060	44060	44060	12	0
b. Multi-Family	4120	4120	4120	12	0
c. Commercial	2322	2322	2322	12	0
d. Industrial	307	307	307	12	0
e. Institutional	89	89	89	12	0
f. Landscape Irrigation	1427	1427	1427	12	0

B. Feasibility Study

1. Has your agency conducted a feasibility study to assess the merits of a program to provide incentives to switch mixed-use accounts to dedicated landscape meters? no
   - a. If YES, when was the feasibility study conducted? (mm/dd/yy)
   - b. Describe the feasibility study:
2. Number of CII accounts with mixed-use meters: 0
3. Number of CII accounts with mixed-use meters retrofitted with dedicated irrigation meters during reporting period. 0

C. "At Least As Effective As"

1. Is your agency implementing an "at least as effective as" variant of this BMP? No
   - a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

D. Comments

BMP 05: Large Landscape Conservation Programs and Incentives

Reporting Unit:	BMP Form Status:	Year:
City of Huntington Beach	**100% Complete**	**2008**

A. Water Use Budgets

1. Number of Dedicated Irrigation Meter Accounts:	1427
2. Number of Dedicated Irrigation Meter Accounts with Water Budgets:	0
3. Budgeted Use for Irrigation Meter Accounts with Water Budgets (AF) during reporting year:	0
4. Actual Use for Irrigation Meter Accounts with Water Budgets (AF) during reporting year:	0
5. Does your agency provide water use notices to accounts with budgets each billing cycle?	no

B. Landscape Surveys

1. Has your agency developed a marketing / targeting strategy for landscape surveys?	no
a. If YES, when did your agency begin implementing this strategy?	
b. Description of marketing / targeting strategy:	
2. Number of Surveys Offered during reporting year.	0
3. Number of Surveys Completed during reporting year.	0
4. Indicate which of the following Landscape Elements are part of your survey:	
a. Irrigation System Check	no
b. Distribution Uniformity Analysis	no
c. Review / Develop Irrigation Schedules	no
d. Measure Landscape Area	no
e. Measure Total Irrigable Area	no
f. Provide Customer Report / Information	no
5. Do you track survey offers and results?	no
6. Does your agency provide follow-up surveys for previously completed surveys?	no
a. If YES, describe below:	

C. Other BMP 5 Actions

1. An agency can provide mixed-use accounts with ETo-based landscape budgets in lieu of a large landscape survey program. Does your agency provide mixed-use accounts with landscape budgets?	no
2. Number of CII mixed-use accounts with landscape budgets.	0
Number of CII accounts with mixed-use meters retrofitted with dedicated irrigation meters during reporting period. (From BMP 4 report)	0
Total number of change-outs from mixed-use to dedicated	

irrigation meters since Base Year.

3. Do you offer landscape irrigation training? yes

4. Does your agency offer financial incentives to improve landscape water use efficiency? yes

Type of Financial Incentive:	Budget (Dollars/ Year)	Number Awarded to Customers	Total Amount Awarded
a. Rebates	10000	1	180
b. Loans	0	0	0
c. Grants	0	0	0

5. Do you provide landscape water use efficiency information to new customers and customers changing services? No

a. If YES, describe below:

6. Do you have irrigated landscaping at your facilities? yes

a. If yes, is it water-efficient? yes

b. If yes, does it have dedicated irrigation metering? yes

7. Do you provide customer notices at the start of the irrigation season? no

8. Do you provide customer notices at the end of the irrigation season? no

D. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? No

a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

E. Comments

BMP 06: High-Efficiency Washing Machine Rebate Programs

Reporting Unit: **City of Huntington Beach**

BMP Form Status: **100% Complete**

Year: **2008**

A. Coverage Goal

	Single Family	Multi-Family
1. Number of **residential** dwelling units in the agency service area.	43,958	35,467
2. Coverage Goal =		**= 6,100 Points**

B. Implementation

1. Does your agency offer rebates for **residential** high-efficiency washers? yes

HEW Water Factor	Number of Financial Incentives Issued	Total Value of Financial Incentives: Retail Water Agency	Wholesaler/ Grants (if applicable)	Energy Utility (if applicable)	TOTAL	POINTS AWARDED
2. **Greater than 8.5 but not exceeding 9.5** (1 point)	0	$ 0	$ 0	$ 0	$ 0	0
3. **Greater than 6.0 but not exceeding 8.5** (2 points)	0	$ 0	$ 0	$ 0	$ 0	0
4. **Less than or equal to 6.0** (3 points)	750	$ 0	$ 75,000	$ 0	$ 75,000	2250
TOTALS:	**750**	**$ 0**	**$ 75,000**	**$ 0**	**$ 75,000**	**2,250**

C. Past Credit Points

For HEW incentives issued before July 1, 2004, select ONE of the following TWO options:

- Method One: Points based on HEW Water Factor
- Method Two: Agency earns 1 point for each HEW.

Method Two: Agency earns 1 point for each HEW

	Number of Financial Incentives Issued	Total Value of Water Agency Financial Incentives	POINTS AWARDED
4. **Total HEWs installed**	1457	$ 145,700	1457
PAST CREDIT TOTALS:	**1457**	**$ 145,700**	**1,457**

D. Rebate Program Expenditures

1. Average or Estimated Administration and Overhead	$ 1,048
2. Is the financial incentive offered per HEW at least equal to the marginal benefits of the water savings per HEW?	yes

E. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP?	no

a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

F. Comments

BMP 07: Public Information Programs

Reporting Unit:	BMP Form Status:	Year:
City of Huntington Beach	**100% Complete**	**2008**

A. Implementation

1. How is your public information program implemented?
   Wholesaler implements program (none or minimal retailer participation)

Which wholesaler(s)?
Municipal Water District of Orange County and Metropolitan Water District of Southern California.

Public Information Program Activity Reported By Wholesaler

BMP 08: School Education Programs

Reporting Unit:	BMP Form Status:	Year:
City of Huntington Beach	**100% Complete**	**2008**

A. Implementation

1. How is your public information program implemented?
   Wholesaler implements program (none or minimal retailer participation)
   Which wholesaler(s)?
   Municipal Water District of Orange County.

Public Information Program Activity Reported By Wholesaler

BMP 09: Conservation Programs for CII Accounts

Reporting Unit: **City of Huntington Beach**

BMP Form Status: **100% Complete**

Year: **2008**

A. Implementation

1. Has your agency identified and ranked COMMERCIAL customers according to use?	no
2. Has your agency identified and ranked INDUSTRIAL customers according to use?	yes
3. Has your agency identified and ranked INSTITUTIONAL customers according to use?	yes

Option A: CII Water Use Survey and Customer Incentives Program

4. Is your agency operating a CII water use survey and customer incentives program for the purpose of complying with BMP 9 under this option? If so, please describe activity during reporting period:	yes

CII Surveys	Commercial Accounts	Industrial Accounts	Institutional Accounts
a. Number of New Surveys Offered	0	1	0
b. Number of New Surveys Completed	0	0	0
c. Number of Site Follow-ups of Previous Surveys (within 1 yr)	0	0	0
d. Number of Phone Follow-ups of Previous Surveys (within 1 yr)	0	0	0

CII Survey Components	Commercial Accounts	Industrial Accounts	Institutional Accounts
e. Site Visit	no	no	no
f. Evaluation of all water-using apparatus and processes	no	no	no
g. Customer report identifying recommended efficiency measures, paybacks and agency incentives	no	no	no

Agency CII Customer Incentives	Budget ($/Year)	# Awarded to Customers	Total $ Amount Awarded
h. Rebates	0	0	0
i. Loans	0	0	0
j. Grants	0	0	0
k. Others	0	0	0

Option B: CII Conservation Program Targets

5. Does your agency track CII program interventions and water savings for the purpose of complying with BMP 9 under this option?	yes
6. Does your agency document and maintain records on how savings were realized and the method of calculation for estimated savings?	yes

7. **System Calculated** annual savings (AF/yr):

CII Programs	# Device Installations
a. Ultra Low Flush Toilets	0
b. Dual Flush Toilets	0
c. High Efficiency Toilets	2
d. High Efficiency Urinals	0
e. Non-Water Urinals	27
f. Commercial Clothes Washers (coin-op only; not industrial)	0
g. Cooling Tower Controllers	0
h. Food Steamers	0
i. Ice Machines	0
j. Pre-Rinse Spray Valves	0
k. Steam Sterilizer Retrofits	0
l. X-ray Film Processors	0

8. **Estimated** annual savings (AF/yr) from agency programs not including the devices listed in Option B. 7., above:

CII Programs	Annual Savings (AF/yr)
a. Site-verified actions taken by agency:	0
b. Non-site-verified actions taken by agency:	0

B. Conservation Program Expenditures for CII Accounts

	This Year	Next Year
1. Budgeted Expenditures	0	0
2. Actual Expenditures	0	

C. "At Least As Effective As"

1. Is your agency implementing an "at least as effective as" variant of this BMP? No

a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

The city of Huntington Beach participates in a regional CII Rebate Program facilitated by our regional wholesaler, MWD of Southern California. We do not directly contribute financially to the program, but we do contribute through the water rates paid to MWDOC. MWD will report regional budget and total amount awarded values on our behalf.

D. Comments

BMP 11: Conservation Pricing

Reporting Unit:	BMP Form Status:	Year:
City of Huntington Beach	**100% Complete**	**2008**

A. Implementation

Water Service Rate Structure Data by Customer Class

1. Single Family Residential

a. Rate Structure	Uniform
b. Total Revenue from Volumetric Rates	$ 9,195,844
c. Total Revenue from Customer Meter/Service (Fixed) Charges	$ 6,211,897

2. Multi-Family Residential

a. Rate Structure	Uniform
b. Total Revenue from Volumetric Rates	$ 4,070,773
c. Total Revenue from Customer Meter/Service (Fixed) Charges	$ 4,483,083

3. Commercial

a. Rate Structure	Uniform
b. Total Revenue from Volumetric Rates	$ 2,553,969
c. Total Revenue from Customer Meter/Service (Fixed) Charges	$ 1,627,664

4. Industrial

a. Rate Structure	Uniform
b. Total Revenue from Volumetric Rates	$ 539,466
c. Total Revenue from Customer Meter/Service (Fixed) Charges	$ 231,005

5. Institutional / Government

a. Rate Structure	Uniform
b. Total Revenue from Volumetric Rates	$ 182,283
c. Total Revenue from Customer Meter/Service (Fixed) Charges	$ 84,025

6. Dedicated Irrigation (potable)

a. Rate Structure	Uniform
b. Total Revenue from Volumetric Rates	$ 1,974,410
c. Total Revenue from Customer Meter/Service (Fixed) Charges	$ 649,867

7. Recycled-Reclaimed

a. Rate Structure	Service Not Provided
b. Total Revenue from Volumetric Rates	$ 0
c. Total Revenue from Customer Meter/Service (Fixed) Charges	$ 0

8. Raw

a. Rate Structure	Service Not Provided
b. Total Revenue from Volumetric Rates	$ 0

c. Total Revenue from Customer Meter/Service (Fixed) Charges	$ 0

9. Other

a. Rate Structure	Service Not Provided
b. Total Revenue from Volumetric Rates	$ 0
c. Total Revenue from Customer Meter/Service (Fixed) Charges	$ 0

B. Implementation Options

Select Either Option 1 or Option 2:

1. Option 1: Use Annual Revenue As Reported

V/(V+M) >= 70%

V = Total annual revenue from volumetric rates

M = Total annual revenue from customer meter/service (fixed) charges

Selected

2. Option 2: Use Canadian Water & Wastewater Association Rate Design Model

V/(V+M) >= V'/(V'+M')

V = Total annual revenue from volumetric rates

M = Total annual revenue from customer meter/service (fixed) charges

V' = The uniform volume rate based on the signatory's long-run incremental cost of service

M' = The associated meter charge

a. If you selected Option 2, has your agency submitted to the Council a completed Canadian Water & Wastewater Association rate design model?

b. Value for **V'** (uniform volume rate based on agency's long-run incremental cost of service) as determined by the Canadian Water & Wastewater Association rate design model:

c. Value for **M'** (meter charge associated with V' uniform volume rate) as determined by the Canadian Water & Wastewater Association rate design model:

C. Retail Wastewater (Sewer) Rate Structure Data by Customer Class

1. Does your agency provide sewer service? (If YES, answer questions 2 - 7 below, else continue to section D.)	yes

2. Single Family Residential

a. Sewer Rate Structure	Non-volumetric Flat Rate
b. Annual Revenue Requirement	$ 5,130,000
c. Total Revenue from Customer Commodity Charges	$ 0

flat fixed fee

3. Multi-Family Residential

a. Sewer Rate Structure	Non-volumetric Flat Rate
b. Annual Revenue Requirement	$ 2,940,000
c. Total Revenue from Customer Commodity	$ 0

Charges

4. Commercial

a. Sewer Rate Structure	Non-volumetric Flat Rate
b. Annual Revenue Requirement	$ 1,880,000
c. Total Revenue from Customer Commodity Charges	$ 0

5. Industrial

a. Sewer Rate Structure	Non-volumetric Flat Rate
b. Annual Revenue Requirement	$ 0
c. Total Revenue from Customer Commodity Charges	$ 0

6. Institutional / Government

a. Sewer Rate Structure	Non-volumetric Flat Rate
b. Annual Revenue Requirement	$ 600,000
c. Total Revenue from Customer Commodity Charges	$ 0

7. Recycled-reclaimed water

a. Sewer Rate Structure	Service Not Provided
b. Annual Revenue Requirement	$ 0
c. Total Revenue from Customer Commodity Charges	$ 0

D. "At Least As Effective As"

1. Is your agency implementing an "at least as effective as" variant of this BMP? No

a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

E. Comments

The Industrial Revenue is included in the Commercial Annual Revenue Requirement.

BMP 12: Conservation Coordinator

Reporting Unit:	BMP Form Status:	Year:
City of Huntington Beach	**100% Complete**	**2008**

A. Implementation

1. Does your Agency have a conservation coordinator?	yes
2. Is a coordinator position supplied by another agency with which you cooperate in a regional conservation program ?	yes
a. Partner agency's name:	MWDOC
3. If your agency supplies the conservation coordinator:	
a. What percent is this conservation coordinator's position?	50%
b. Coordinator's Name	William C. Crisp
c. Coordinator's Title	Water Conservation Coordinator
d. Coordinator's Experience in Number of Years	Level I Water Conservation Practitoner - 2 years
e. Date Coordinator's position was created (mm/dd/yyyy)	03/01/2008
4. Number of conservation staff (FTEs), including Conservation Coordinator.	1

B. Conservation Staff Program Expenditures

1. Staffing Expenditures (In-house Only)	30450
2. BMP Program Implementation Expenditures	10000

C. "At Least As Effective As"

1. Is your agency implementing an "at least as effective as" variant of this BMP?	no

a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

D. Comments

BMP 13: Water Waste Prohibition

Reporting Unit:	BMP Form Status:	Year:
City of Huntington Beach	**100% Complete**	**2008**

A. Requirements for Documenting BMP Implementation

1. Is a water waste prohibition ordinance in effect in your service area? yes

   a. If YES, describe the ordinance:

   14.16.020 of the Huntington Beach Municipal Code states that no person shall waste water or allow it to be wasted from improper fixtures.

2. Is a copy of the most current ordinance(s) on file with CUWCC? yes

   a. List local jurisdictions in your service area in the first text box and water waste ordinance citations in each jurisdiction in the second text box:

   N/A N/A

B. Implementation

1. Indicate which of the water uses listed below are prohibited by your agency or service area.

   a. Gutter flooding yes

   b. Single-pass cooling systems for new connections no

   c. Non-recirculating systems in all new conveyor or car wash systems no

   d. Non-recirculating systems in all new commercial laundry systems no

   e. Non-recirculating systems in all new decorative fountains no

   f. Other, please name no

2. Describe measures that prohibit water uses listed above:

   Visual inspections and citations where warranted.

Water Softeners:

3. Indicate which of the following measures your agency has supported in developing state law:

   a. Allow the sale of more efficient, demand-initiated regenerating DIR models. yes

   b. Develop minimum appliance efficiency standards that:

      i.) Increase the regeneration efficiency standard to at least 3,350 grains of hardness removed per pound of common salt used. yes

      ii.) Implement an identified maximum number of gallons discharged per gallon of soft water produced. yes

   c. Allow local agencies, including municipalities and special districts, to set more stringent standards and/or to ban on-site regeneration of water softeners if it is demonstrated and found by the agency governing board that there is an adverse effect on the reclaimed water or groundwater supply. yes

4. Does your agency include water softener checks in home water audit programs? yes

5. Does your agency include information about DIR and exchange-type water softeners in educational efforts to encourage replacement no

of less efficient timer models?

C. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? no

a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

D. Comments

Any expenditures are not tracked separately

BMP 14: Residential ULFT Replacement Programs

Reporting Unit:	BMP Form Status:	Year:
City of Huntington Beach	**100% Complete**	**2008**

A. Implementation

Number of Non-Efficient Toilets Replaced With 1.6 gpf Toilets During Report Year

	Single-Family Accounts	Multi-Family Units
1. Does your Agency have program(s) for replacing high-water-using toilets with ultra-low flush toilets?	yes	yes
Replacement Method	**SF Accounts**	**MF Units**
2. Rebate	90	31
3. Direct Install	0	0
4. CBO Distribution	0	0
5. Other	0	0
Total	**90**	**31**

Number of Non-Efficient Toilets Replaced With 1.28 gpf High-Efficiency Toilets (HETs) During Report Year

	Single-Family Accounts	Multi-Family Units
6. Does your Agency have program(s) for replacing high-water-using toilets with ultra-low flush toilets?	yes	yes
Replacement Method	**SF Accounts**	**MF Units**
7. Rebate	45	11
8. Direct Install	0	0
9. CBO Distribution	0	0
10. Other	0	0
Total	**45**	**11**

Number of Non-Efficient Toilets Replaced With 1.2 gpf HETs (Dual-Flush) During Report Year

	Single-Family Accounts	Multi-Family Units
11. Does your Agency have program(s) for replacing high-water-using toilets with ultra-low flush toilets?	yes	yes
Replacement Method	**SF Accounts**	**MF Units**
12. Rebate	3	0
13. Direct Install	0	0
14. CBO Distribution	0	0
15. Other	0	0
Total	**3**	**0**

16. Describe your agency's ULFT, HET, and/or Dual-Flush Toilet programs for single-family residences.

Huntington Beach participates in a region wide ULFT, HET, and DFT rebate program for both SF and MF. Our regional wholesaler, MWDOC administers the program on our behalf. They contract with a vendor to market the program and facilitate the rebate process for our customers.

17. Describe your agency's ULFT, HET, and/or Dual-Flush Toilet programs for multi-family residences.

See #16

18. Is a toilet retrofit on resale ordinance in effect for your service area? no

19. List local jurisdictions in your service area in the left box and ordinance citations in each jurisdiction in the right box:

N/A	N/A

B. Residential ULFT Program Expenditures

1. Estimated cost per replacement: $ 0

C. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? no

a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

D. Comments

The fields in red are required.

Primary contact:

Agency name: City of Huntington Beach

Reporting unit name (District name): City of Huntington Beach

Reporting unit number: 6281

Bill

ton Beach

bcrisp@surfcity-hb.org

urfcity-hb.org

Submit Form

Base Year Data

Link to FAQs

Reporting Unit Base Year

What is your reporting period?

Base Year: 2008

BMP 1.3 Metering

Number of unmetered accounts in Base Year: 0

BMP 3.1 & BMP 3.2 & BMP 3.3 Residential Programs

Number of Single Family Customers in Base Year: 44,060

Number of Multi Family Units in Base Year: 4,120

BMP 3.4 WaterSense Specification (WSS) Toilets

Number of Single Family Housing Units constructed prior to 1992: 41,494

Number of Multi Family Units prior to 1992: 28121

Average number of toilets per single family household: 2.4

Average number of toilets per multi family household: 1.4

Five year average resale rate of single family households: 4.71

Five-year average resale rate of multi family households: 6.5

Average number of persons per single family household: 2.9

Average number of persons per multi family household: 2.45

BMP 4.0 & BMP 5.0 CII & Landscape

Total water use (in Acre Feet) by CII accounts: 5,394

Number of accounts with dedicated irrigation meters: 1,427

Number of CII accounts without meters or with Mixed Use Meters: 1,291

Number of CII accounts: 2,718

Comments:

version 1.0

version 1.0

version 1.0

version 1.0

version 1.0

version 1.0

version 1.0

version 1.0

version 1.0

The fields in red are required.

Primary contact:

Agency nam: City of Huntington Beach | Bill

Reporting uni: City of Huntington Beach | ton Beach

(District name: City of Huntington Beach)

Reporting unit num: 6281 | bcrisp@surfcity-hb.org | urfcity-hb.org

Submit Form

Link to FAQs

2009

BMP 1.1
Operations Practices

See the complete MOU: View MOU

See the coverage requirements for this BMP:

Comments:

Conservation Coordinator

Conservation Coordinator ◯ Yes ◯ No

Bill

Crisp

Water Conservation Coordinator

Phone 714.374.1796

Email bcrisp@surfcity-hb.org

Water Waste Prevention

Water Agency shall do one or more of the following:

a. Enact and enforce an ordinance or establish terms of service that prohibit water waste
b. Enact and enforce an ordinance or establish terms of service for water efficient design in new development
c. Support legislation or regulations that prohibit water waste
d. Enact an ordinance or establish terms of service to facilitate implementation of water shortage response measures
e. Support local ordinances that prohibit water waste
f. Support local ordinances that establish permits requirements for water efficient design in new

To document this BMP, provide the following:

File name(s): Email files to natalie

Water Management Program June 2008 (e-mailed to natalie 053111)

Web address(s) URL: comma-separated list

Enter a description:

The Water Management Program was first created in 1991. An update took place in June 2008.

The fields in red are required.

Primary contact:

City of Huntington Beach | Bill

City of Huntington Beach | ton Beach

6281 | bcrisp@surfcity-hb.org | urfcity-hb.org

must enter the

Submit Form

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Link to FAQs

View MOU

2009 BMP 1.2 Water Loss Control

Did your agency complete a pre-screening system audit in 2009? Yes ○ No ◉

If yes, answer the following:

Determine metered sales in AF:

Does your agency keep necessary data on file to verify the answers above? Yes ○ No ○

Did your agency complete a full-scale system water audit during 2009? Yes ○ No ◉

Does your agency maintain in-house records of audit results or the completed AWWA worksheet for the completed audit which could be forwarded to CUWCC? Yes ◉ No ○

Did your agency operate a system leak detection program? Yes ○ No ◉

The fields in red are required.

Primary contact:

City of Huntington Beach | Bill

City of Huntington Beach | ton Beach

6281 | bcrisp@surfcity-hb.org | urfcity-hb.org

You must enter the

Submit Form

gency. Click here to open a table to obtain this umber.

Link to FAQs

2009 BMP 1.2 Water Loss Control

View MOU

AWWA Water Audit

Agency to complete a Water Audit & Balance Using The AWWA Software ○ Yes ○ No

Email to natalie@cuwcc.org - Worksheets (AWWA Water Audit). Enter the name of the file below:

HB WaterAudit 4.0.xls (e-mailed to natalie 053011)

Water Audit Validity Score from AWWA spreadsheet: 88

Agency Completed Training In The AWWA Water Audit Method ○ Yes ○ No

Agency Completed Training In The Component Analysis Process ○ Yes ○ No

Completed/Updated the Component Analysis (at least every 4 years)? ○ Yes ○ No

Component Analysis Completed/Updated Date

Water Loss Performance

Agency Repaired All Reported Leaks & Breaks To The Extent Cost Effective ○ Yes ○ No

Recording Keeping Requirements:

Date/Time Leak Reported	Leak Location
Type of Leaking Pipe Segment or Fitting	Leak Running Time From Report to Repair
Leak Volume Estimate	Cost of Repair

Agency Located and Repaired Unreported Leaks to the Extent Cost Effective ○ Yes ○ No

Type of Program Activities Used to Detect Unreported Leaks

Continuous screening of meter reads for unusual high consumption.

2009

Annual Summary Information

Complete the following table with annual summary information (required for reporting years 2-5 only)

2009

2009

version 1.0

Total Leaks Repaired	Economic Value Of Real Loss	Economic Value Of Apparent Loss	Miles Of System Surveyed For Leaks	Pressure Reduction Undertaken for loss reduction	Cost Of Interventions	Water Saved (AF/Year)

Comments:

2009 2009 version 1.0

The fields in red are required.

Primary contact:

of Huntington Beach | Bill

Reporting unit name

of Huntington Beach | ton Beach

6281 | bcrisp@surfcity-hb.org | urfcity-hb.org

6281

You must enter the reporting unit number

Submit Form

agency. Click here to open a table to obtain this number.

BMP 1.3 Metering with Commodity

Link to FAQs

See the complete MOU: View MOU

See the coverage requirements for this BMP:

Implementation

Does your agency have any unmetered service connections? Yes No

If YES, has your agency completed a meter retrofit plan? Yes No

written plan/ policy or program to test, repair and replace meters?

Please Fill Out The Following Matrix

Account Type	# Metered Accounts	# Metered Accounts Read	# Metered Accounts Billed by Volume	Billing Frequency Per Year	# of estimated bills/yr
	44135	44135	44135		0
	4119	4119	4119		0
	2291	2291	2291		0
	307	307	307		0
	96	96	96		0
	1400	1400	1400		0

Number of CII Accounts with Mixed-use Meters

Number of CII Accounts with Mixed-use Meters Retrofitted

0

Enter the file name here e.g. WaterWastePreventionOrdinance

Web address(s) URL: comma-separated list

Enter the URL to your documentation.

Enter the URL to your documentation.

General Comments about BM

The fields in red are required.

Primary contact:

City of Huntington Beach | Bill

City of Huntington Beach | Huntington Beach

6281 | bcrisp@surfcity-hb.org | urfcity-hb.org

You must enter the reporting unit number that we have on record for your agency. Click here to open a table to obtain this number.

Link to FAQs

View MOU

BMP 1.4 Retail Conservation Pricing

If you are reporting more rate structures than this form allows, add the structures to a spreadsheet and send the file to natalie@cuwcc.org.

2009

Implementation (Water Rate Structure)

Enter the Water Rate Structures that are assigned to the majority of your customers, by customer class

ges)

		9980548.9153	6410150.0442
		4410306.1254	4622700.6018
		2656530.8392	1675571.049
		558191.6699	238213.7154
		124351.7189	85569.3882
		2227308.1164738	666451.3842

Implementation Option (Conservation Pricing Option)

- ○ Use Annual Revenue As Reported
- ○ Use Canadian Water & Wastewater Association Rate Design Model

If CWWA is select, enter the file name and email the spreadsheet to natalie@cuwcc.org

Retail Waste Water (Sewer) Rate Structure by Customer Class

Agency Provide Sewer Service ○ Yes ○ No

Select the Retail Waste Water(Sewer) Rate Structure assigned to the majority of your customers within a

ges)

			5514074.95
			3242662.76
			1243636.98
			177616
			66533.49
			0

Comments:

version 1.0 2009

The fields in red are required.

Primary contact:

Agency name: City of Huntington Beach | Bill

Reporting unit (District name): City of Huntington Beach | ton Beach

Reporting unit numb: 6281 | bcrisp@surfcity-hb.org | urfcity-hb.org

Submit Form

Link to FAQs

2009

BMP 2.1 Public Outreach - Retail Reporting

View MOU

Is a Wholesale Agency Performing Public Outreach?

Are there one or more wholesale agencies performing public outreach which can be counted to help your agency comply with the BMP? ○ Yes ○ No

Enter the name(s) of the wholesale agency (comma delimited): MWDOC

Is your agency performing public outreach?

Report a minimum of 4 water conservation related contacts your agency had with the public during the year.

Public Information Programs List

Did at least one contact take place during each quarter of the reporting year? ☑

Number of Public Contacts		Public Information Programs	
45			
14			
12			
1			
12			

Contact with the Media

Are there one or more wholesale agencies performing media outreach which can be counted to help your agency comply with the BMP? ○ Yes ○ No

Enter the name(s) of the wholesale agency (comma delimited): MWDOC

OR Retail Agency (Contacts with the Media)

Media Contacts List

Did at least one contact take place during each quarter of the reporting year? ☐

Number of Media Contacts	Did at least one contact take place during each quarter of the reporting year?	Media Contact Types	
1			

Is a Wholesale Agency Performing Website Updates?

Did one or more CUWCC wholesale agencies agree to assume your agency's responsibility for meeting the requirements of and for CUWCC reporting of this BMP? ○ Yes ○ No

Enter the name(s) of the wholesale agency (comma delimited)

Is Your Agency Performing Website Updates?

Enter your agency's URL (website address): http://www.huntingtonbeachca.gov/government/departments/public_works/water_conservation/

Describe a minimum of four water conservation related updates to your agency's website that took place during the year:

The website is added to and updated a couple of times per month with information, announcements, events pertaining to sustainability and water conservation, and messages to the residents.

Did at least one Website Update take place during each quarter of the reporting year? ○ Yes ○ No

Public Outreach Annual Budget

Enter budget for public outreach programs. You may enter total budget in a single line or brake the budget into discrete categories by entering many rows. Please indicate if personnel costs are included in the entry.

Category	Amount		Personnel Costs Included? If yes, check the box.	Comments	
	35000				

Comments:

version

The fields in red are required.

Primary contact:

Agency

City of Huntington Beach

Bill

Reporting unit (District)

City of Huntington Beach

Beach

Reporting unit

6281

6281

bcrisp@surfcity-hb.org

urfcity-hb.org

table that

reporting unit number. Please

ensure that you enter the

Submit Form

Link to FAQs

2009

BMP 2.1 Public Outreach Cont'd

View MOU

Public Outreach Expenses

Enter expenses for public outreach programs. Please include the same kind of expenses you included in the question related to your budget (Section 2.1.7, above). For example, if you included personnel costs in the budget entered above, be sure to include them here as well.

Expense Category	Expense Amount	Personnel Costs Included?	
Printing, material development etc	25000		If yes, check the check box.
Informative giveaways	10000		

Additional Public Information Program

Please report additional public information contacts. List these additional contacts in order of how your agency views their importance / effectiveness with respect to conserving water, with the most important/ effective listed first (where 1 = most important).

Were there additional Public Outreach efforts? ○ Yes ○ No

Public Outreach Additional Information

Public Information Programs	Importance	
	1	
	2	

Social Marketing Programs

Branding

Does your agency have a water conservation "brand," "theme" or mascot? ○ Yes ○ No

Describe the brand, theme or mascot.

H.B. "Use Water Wisely". MWDOC "Water; Do More With Less" - "Ricky the Raindrop".

Market Research

Have you sponsored or participated in market research to refine your message? ○ Yes ○ No

Market Research Topic	
Brand Message	
Brand Mission Statement	

Community Committees

Do you have a community conservation committee? ○ Yes ○ No

Enter the names of the community committees: H.B. Environmental Board

Training

Training Type	# of Trainings	# of Attendees	Description of Other
Landscape class	1	70	
Irrigation class	1	45	

Social Marketing Expenditures

Public Outreach Social Marketing Expenses

Expense Category	Expense Amount	Description

Partnering Programs - Partners

Name	Type of Program
☐ CLCA?	
☐ Green Building Programs?	
☐ Master Gardeners?	
☐ Cooperative Extension?	
☐ Local Colleges?	
☐ Other	

☐ Retail and wholesale outlet; name(s) and type(s) of programs:

H20 for HOA's	Central Orange County water agencies' event for HOA's

Partnering Programs - Newsletters

Number of newsletters per year: 0

Number of customers per year	0

Partnering with Other Utilities

Describe other utilities your agency partners with, including electrical utilities	

Conservation Gardens

Describe water conservation gardens at your agency or other high traffic areas or new	A water conservation demonstration garden was installed in 2009 at the H.B. Central Library and at the Triangle Park on Main Street in downtown H.B.

Landscape contests or awards

Describe water wise landscape contest or awards program conducted by your agency	

Comments:

The fields in red are required.

Primary contact:

Agency nam: City of Huntington Beach

Reporting un (District nam: City of Huntington Beach

Reporting unit nu: 6281

Bill

ton Beach

bcrisp@surfcity-hb.org

urfcity-hb.org

le that reporting unit name. Please ensure that you enter the

Submit Form

Link to FAQs

2009

BMP 2.2 School Education Programs, Retail Agencies

View MOU

School Programs

Is a wholesale agency implementing school programs which can be counted to help your agency comply with this BMP? ○ Yes ○ No

Enter Wholesaler Names, separated by commas: MWDOC

☐ Materials meet state education framework requirements?

Description of Materials

☐ Materials distributed to K-6 Students?

Description of materials distributed to K-6 Students

Number of students reached: 5711

☐ Materials distributed to 7-12 Students?

Description of materials distributed to 7-12 Students

Number of Distribution

Annual budget for school education program

Description of all other water supplier education programs

School Program Activities

Classroom presentations:

Number of presentations | Number of attendees

Large group assemblies:

Number of presentations | Number of attendees

Children's water festivals or other events:

Number of presentations | Number of attendees

Cooperative efforts with existing science/water education programs (various workshops, science fair awards or judging) and follow-up:

Number of presentations | Number of attendees

Other methods of disseminating information (i.e. themed age-appropriate classroom loaner kits):

Description

Number distributed

Staffing children's booths at events & festivals:

Number of booths | Number of attendees

Water conservation contests such as poster and photo:

Description: Annual MWDOC poster and slogan competition.

Number distributed

Offer monetary awards/funding or scholarships to students:

Number Offered | Total Funding

Teacher training workshops:

Number of internships | Total funding

Career fairs/workshops:

Number of presentations | Number of attendees

Additional program(s) supported by agency but not mentioned above:

Description

Number of events (if applicable) | Number of participants

Total reporting period budget expenditures for school education programs (include all agency costs):

Comments

version 1.0 2009

The fields in red are required.

Primary contact:

Agency name: City of Huntington Beach

Division name (Reporting unit): City of Huntington Beach

Reporting unit number: 6281

Bill

bcrisp@surfcity-hb.org

Submit Form

2009

Service Area Population: 203,568

Non- Potable Water

If you select Other for type, enter

Own Supply Source Name	AF/YEAR	Water Supply Type	Water Supply Description

Imported Supply Source Name	AF/YEAR	Water Supply Type	Water Supply Description

Exported Water Name	AF/YEAR	Where Exported? such as groundwater recharge, retail,

2009

2009

2009

2009

2009

The fields in red are required.

Primary contact:

Agency name: City of Huntington Beach

Division name (Reporting unit): City of Huntington Beach

Reporting unit number: 6281

Bill

ton Beach

bcrisp@surfcity-hb.org

urfcity-hb.org

WATER SOURCES

Service Area Population: 203,568

2009

Potable Water

Own Supply Source Name	AF/YEAR	Water Supply Type	Water Supply Description
OCWD	20868		Wells on the OC groundwater basin

Imported Supply Source Name	AF/YEAR	Water Supply Type	Water Supply Description
MWDOC	10181		Imported water

Exported Water Name	AF/YEAR	Where Exported?

2009

2009

2009

2009

2009

2009

The fields in red are required.

Agency name: City of Huntington Beach

Division name (Reporting unit): City of Huntington Beach

Reporting unit number: 6281

Primary contact: Bill

bcrisp@surfcity-hb.org

Submit Form

Water Uses

2009

Non-Potable Billed

Customer Type	Meter Accounts	Metered Water Delivered	Un-metered Accounts	Un-metered Water Delivered	Description

Non-Potable Un-Billed

Customer Type	Meter Accounts	Metered Water Delivered	Un-metered Accounts	Un-metered Water Delivered	Description

2009

2009

2009

2009

2009

2009

2009

The fields in red are required.

Primary contact:

Agency name: City of Huntington Beach

Division name (Reporting unit): City of Huntington Beach

Reporting unit number: 6281

Bill

ton Beach

bcrisp@surfcity-hb.org

urfcity-hb.org

Submit Form

Water Uses

2009

Potable Water Billed

Make sure to enter numbers in AF/Year.

Customer Type	Meter Accounts	Metered Water Delivered	Un-metered Accounts	Un-metered Water Delivered	Description
	44081	14391			
	4118	6355			
	2305	3836			
	307	805			
	92	179			
	1415	3267			

Potable Water Un-Billed

Customer Type	Meter Accounts	Metered Water Delivered	Un-metered Accounts	Un-metered Water Delivered	Description

2009

2009

2009

2009

2009

2009

2009

2009

The fields in red are required.

Primary contact:

Agency nam: City of Huntington Beach | Bill

Reporting uni: City of Huntington Beach | ton Beach

(District name: | en

Reporting unit num: 6281 | bcrisp@surfcity-hb.org | urfcity-hb.org

Submit Form

Link to FAQs

2010

BMP 1.1
Operations Practices

See the complete MOU: View MOU

See the coverage requirements for this BMP:

Conservation Coordinator

Conservation Coordinator ◯ Yes ◯ No

Comments:

Bill

Crisp

Water Conservation Coordinator

Phone 714.374.1796

Email bcrisp@surfcity-hb.org

Water Waste Prevention

Water Agency shall do one or more of the following:

a. Enact and enforce an ordinance or establish terms of service that prohibit water waste
b. Enact and enforce an ordinance or establish terms of service for water efficient design in new development
c. Support legislation or regulations that prohibit water waste
d. Enact an ordinance or establish terms of service to facilitate implementation of water shortage response measures
e. Support local ordinances that prohibit water waste
f. Support local ordinances that establish permits requirements for water efficient design in new

To document this BMP, provide the following:

version 1.0 2009 ons

or

version 1.0 2009

2009

File name(s): Email files to natalie

Water Management Program June 2008 (e-mailed to natalie 053111)

Web address(s) URL: comma-separated list

Enter a description:

The Water Management Program was first created in 1991. An update took place in June 2008.

2009

version 1.0 2009 200 2009

The fields in red are required.

Primary contact:

City of Huntington Beach | Bill

City of Huntington Beach | 6281 | bcrisp@surfcity-hb.org

You must enter the reporting unit number that we have on record for your agency. Click here to open a table to obtain this number.

Link to FAQs

2010 BMP 1.2 Water Loss Control

View MOU

AWWA Water Audit

Agency to complete a Water Audit & Balance Using The AWWA Software ○ Yes ○ No

Email to natalie@cuwcc.org - Worksheets (AWWA Water Audit). Enter the name of the file below:

HB WaterAudit 4.0.xls (e-mailed to natalie 053011)

Water Audit Validity Score from AWWA spreadsheet: 88

Agency Completed Training In The AWWA Water Audit Method ○ Yes ○ No

Agency Completed Training In The Component Analysis Process ○ Yes ○ No

Completed/Updated the Component Analysis (at least every 4 years)? ○ Yes ○ No

Component Analysis Completed/Updated Date

Water Loss Performance

Agency Repaired All Reported Leaks & Breaks To The Extent Cost Effective ○ Yes ○ No

Recording Keeping Requirements:

Date/Time Leak Reported	Leak Location
Type of Leaking Pipe Segment or Fitting	Leak Running Time From Report to Repair
Leak Volume Estimate	Cost of Repair

Agency Located and Repaired Unreported Leaks to the Extent Cost Effective ○ Yes ○ No

Type of Program Activities Used to Detect Unreported Leaks

Continuous screening of meter reads for unusual high consumption.

2009

Annual Summary Information

Complete the following table with annual summary information (required for reporting years 2-5 only)

2009

2009

version 1.0

Total Leaks Repaired	Economic Value Of Real Loss	Economic Value Of Apparent Loss	Miles Of System Surveyed For Leaks	Pressure Reduction Undertaken for loss reduction	Cost Of Interventions	Water Saved (AF/Year)

Comments:

2009

The fields in red are required.

Primary contact:

of Huntington Beach | Bill

You must enter the reporting unit number

Submit Form

Reporting unit name

of Huntington Beach | ton Beach

agency. Click here to open a table to obtain this number.

6281 | bcrisp@surfcity-hb.org | urfcity-hb.org

6281

BMP 1.3 Metering with Commodity

2010

Link to FAQs

See the complete MOU: View MOU

See the coverage requirements for this BMP:

Implementation

Does your agency have any unmetered service connections? Yes No

If YES, has your agency completed a meter retrofit plan? Yes No

written plan/ policy or program to test, repair and replace meters?

Please Fill Out The Following Matrix

Account Type	# Metered Accounts	# Metered Accounts Read	# Metered Accounts Billed by Volume	Billing Frequency Per Year	# of estimated bills/yr
	44135	44135	44135		0
	4119	4119	4119		0
	2291	2291	2291		0
	307	307	307		0
	96	96	96		0
	1400	1400	1400		0

Number of CII Accounts with Mixed-use Meters

Number of CII Accounts with Mixed-use Meters Retrofitted

0

Enter the file name here e.g. WaterWastePreventionOrdinance

Enter the URL to your documentation.

Enter the URL to your documentation.

Web address(s) URL: comma-separated list

Comm

The fields in red are required.

Primary contact:

You must enter the reporting unit number that we have on record for your agency. Click to obtain this number.

City of Huntington Beach | Bill

Submit Form

City of Huntington Beach | Huntington Beach

6281 | bcrisp@surfcity-hb.org | urfcity-hb.org

6281

Link to FAQs

View MOU

BMP 1.4 Retail Conservation Pricing

2010

If you are reporting more rate structures than this form allows, add the structures to a spreadsheet and send the file to natalie@cuwcc.org.

Implementation (Water Rate Structure)

Enter the Water Rate Structures that are assigned to the majority of your customers, by customer class

ges)

		9980548.9153	6410150.0442
		4410306.1254	4622700.6018
		2656530.8392	1675571.049
		558191.6699	238213.7154
		124351.7189	85569.3882
		2227308.1164738	666451.3842

Implementation Option (Conservation Pricing Option)

- ○ Use Annual Revenue As Reported
- ○ Use Canadian Water & Wastewater Association Rate Design Model

If CWWA is select, enter the file name and email the spreadsheet to natalie@cuwcc.org

Retail Waste Water (Sewer) Rate Structure by Customer Class

Agency Provide Sewer Service ○ Yes ○ No

Select the Retail Waste Water(Sewer) Rate Structure assigned to the majority of your customers within a

ges)

			5514074.95
			3242662.76
			1243636.98
			177616
			66533.49
			0

Comments:

version 1.0 2009

The fields in red are required.

Primary contact:

Agency name: City of Huntington Beach | Bill

Reporting unit (District name): City of Huntington Beach | ton Beach

Reporting unit numb: 6281 | bcrisp@surfcity-hb.org | urfcity-hb.org

Submit Form

Link to FAQs

2010

BMP 2.1 Public Outreach - Retail Reporting

View MOU

Is a Wholesale Agency Performing Public Outreach?

Are there one or more wholesale agencies performing public outreach which can be counted to help your agency comply with the BMP? ○ Yes ○ No

Enter the name(s) of the wholesale agency (comma delimited): MWDOC

Is your agency performing public outreach?

Report a minimum of 4 water conservation related contacts your agency had with the public during the year.

Public Information Programs List

Did at least one contact take place during each quarter of the reporting year? ☑

Number of Public Contacts	Public Information Programs
45	
14	
12	
1	
12	

Contact with the Media

Are there one or more wholesale agencies performing media outreach which can be counted to help your agency comply with the BMP? ○ Yes ○ No

Enter the name(s) of the wholesale agency (comma delimited): MWDOC

OR Retail Agency (Contacts with the Media)

Media Contacts List

Did at least one contact take place during each quarter of the reporting year? ☐

Number of Media Contacts	Did at least one contact take place during each quarter of the reporting year?	Media Contact Types
1		

Is a Wholesale Agency Performing Website Updates?

Did one or more CUWCC wholesale agencies agree to assume your agency's responsibility for meeting the requirements of and for CUWCC reporting of this BMP? ○ Yes ○ No

Enter the name(s) of the wholesale agency (comma delimited)

Is Your Agency Performing Website Updates?

Enter your agency's URL (website address): http://www.huntingtonbeachca.gov/government/departments/public_works/water_conservation/

Describe a minimum of four water conservation related updates to your agency's website that took place during the year:

The website is added to and updated a couple of times per month with information, announcements, events pertaining to sustainability and water conservation, and messages to the residents.

Did at least one Website Update take place during each quarter of the reporting year? ○ Yes ○ No

Public Outreach Annual Budget

Enter budget for public outreach programs. You may enter total budget in a single line or brake the budget into discrete categories by entering many rows. Please indicate if personnel costs are included in the entry.

Category	Amount		Personnel Costs Included? If yes, check the box.	Comments	
	35000				

Comments:

version

The fields in red are required.

Primary contact:

Agency

City of Huntington Beach

Bill

Reporting unit (District)

City of Huntington Beach

Beach

6281

6281

bcrisp@surfcity-hb.org

urfcity-hb.org

table that

reporting unit

er. Please

ensure that you enter the

Submit Form

Link to FAQs

2010

BMP 2.1 Public Outreach Cont'd

View MOU

Public Outreach Expenses

Enter expenses for public outreach programs. Please include the same kind of expenses you included in the question related to your budget (Section 2.1.7, above). For example, if you included personnel costs in the budget entered above, be sure to include them here as well.

Expense Category	Expense Amount	Personnel Costs Included?	
Printing, material development etc	25000		If yes, check the check box.
Informative giveaways	10000		

Additional Public Information Program

Please report additional public information contacts. List these additional contacts in order of how your agency views their importance / effectiveness with respect to conserving water, with the most important/ effective listed first (where 1 = most important).

Were there additional Public Outreach efforts? ○ Yes ○ No

Public Outreach Additional Information

Public Information Programs	Importance	
	1	
	2	

Social Marketing Programs

Branding

Does your agency have a water conservation "brand," "theme" or mascot? ○ Yes ○ No

Describe the brand, theme or mascot.

H.B. "Use Water Wisely". MWDOC "Water; Do More With Less" - "Ricky the Raindrop".

Market Research

Have you sponsored or participated in market research to refine your message? ○ Yes ○ No

Market Research Topic	
Brand Message	
Brand Mission Statement	

Community Committees

Do you have a community conservation committee? ○ Yes ○ No

Enter the names of the community committees: H.B. Environmental Board

Training

Training Type	# of Trainings	# of Attendees	Description of Other
Landscape class	1	70	
Irrigation class	1	45	

Social Marketing Expenditures

Public Outreach Social Marketing Expenses

Expense Category	Expense Amount	Description

Partnering Programs - Partners

Name	Type of Program
☐ CLCA?	
☐ Green Building Programs?	
☐ Master Gardeners?	
☐ Cooperative Extension?	
☐ Local Colleges?	
☐ Other	

☐ Retail and wholesale outlet; name(s) and type(s) of programs:

H20 for HOA's	Central Orange County water agencies' event for HOA's

Partnering Programs - Newsletters

Number of newsletters per year: 0

Number of customers per year	0

Partnering with Other Utilities

Describe other utilities your agency partners with, including electrical utilities	

Conservation Gardens

Describe water conservation gardens at your agency or other high traffic areas or new	A water conservation demonstration garden was installed in 2009 at the H.B. Central Library and at the Triangle Park on Main Street in downtown H.B.

Landscape contests or awards

Describe water wise landscape contest or awards program conducted by your agency	

Comments:

The fields in red are required.

Primary contact:

Agency nam: City of Huntington Beach | Bill

Reporting un (District nam: City of Huntington Beach | ton Beach

Reporting unit nu: 6281 | bcrisp@surfcity-hb.org | urfcity-hb.org

le that reporting unit name. Please ensure that you enter the

Submit Form

Link to FAQs

2010

BMP 2.2 School Education Programs, Retail Agencies

View MOU

School Programs

Is a wholesale agency implementing school programs which can be counted to help your agency comply with this BMP? ○ Yes ○ No

Enter Wholesaler Names, separated by commas: MWDOC

☐ Materials meet state education framework requirements?

Description of Materials

☐ Materials distributed to K-6 Students?

Description of materials distributed to K-6 Students

Number of students reached: 5711

☐ Materials distributed to 7-12 Students?

Description of materials distributed to 7-12 Students

Number of Distribution

Annual budget for school education program

Description of all other water supplier education programs

School Program Activities

Classroom presentations:

Number of presentations | Number of attendees

Large group assemblies:

Number of presentations | Number of attendees

Children's water festivals or other events:

Number of presentations | Number of attendees

Cooperative efforts with existing science/water education programs (various workshops, science fair awards or judging) and follow-up:

Number of presentations | Number of attendees

Other methods of disseminating information (i.e. themed age-appropriate classroom loaner kits):

Description

Number distributed

Staffing children's booths at events & festivals:

Number of booths | Number of attendees

Water conservation contests such as poster and photo:

Description: Annual MWDOC poster and slogan competition.

Number distributed

Offer monetary awards/funding or scholarships to students:

Number Offered | Total Funding

Teacher training workshops:

Number of internships | Total funding

Career fairs/workshops:

Number of presentations | Number of attendees

Additional program(s) supported by agency but not mentioned above:

Description

Number of events (if applicable) | Number of participants

Total reporting period budget expenditures for school education programs (include all agency costs):

Comments

version 1.0 2009

The fields in red are required.

Primary contact:

Agency name: City of Huntington Beach

Division name (Reporting unit): City of Huntington Beach

Reporting unit number: 6281

Bill

ton Beach

bcrisp@surfcity-hb.org

urfcity-hb.org

2010

Service Area Population: 203,568

Non- Potable Water

If you select Other for type, enter

Own Supply Source Name	AF/YEAR	Water Supply Type	Water Supply Description

Imported Supply Source Name	AF/YEAR	Water Supply Type	Water Supply Description

Exported Water Name	AF/YEAR	Where Exported? such as groundwater recharge, retail,

2009

2009

2009

2009

2009

The fields in red are required.

Primary contact:

Agency name: City of Huntington Beach

Division name (Reporting unit): City of Huntington Beach

Reporting unit number: 6281

Bill

ton Beach

bcrisp@surfcity-hb.org

urfcity-hb.org

Submit Form

WATER SOURCES

Service Area Population: 203,568

2010

Potable Water

Own Supply Source Name	AF/YEAR	Water Supply Type	Water Supply Description
OCWD	20868		Wells on the OC groundwater basin

Imported Supply Source Name	AF/YEAR	Water Supply Type	Water Supply Description
MWDOC	10181		Imported water

Exported Water Name	AF/YEAR	Where Exported?

2009

2009

2009

2009

2009

2009

The fields in red are required.

Primary contact:

Agency name: City of Huntington Beach

Division name (Reporting unit): City of Huntington Beach

Reporting unit number: 6281

Bill

ton Beach

bcrisp@surfcity-hb.org

urfcity-hb.org

Water Uses

2010

Potable Water Billed

Make sure to enter numbers in AF/Year.

Customer Type	Meter Accounts	Metered Water Delivered	Un-metered Accounts	Un-metered Water Delivered	Description
	44081	14391			
	4118	6355			
	2305	3836			
	307	805			
	92	179			
	1415	3267			

Potable Water Un-Billed

Customer Type	Meter Accounts	Metered Water Delivered	Un-metered Accounts	Un-metered Water Delivered	Description

2009

2009

2009

2009

2009

2009

2009

The fields in red are required.

Primary contact:

Agency name: City of Huntington Beach

Division name (Reporting unit): City of Huntington Beach

Reporting unit number: 6281

Bill

bcrisp@surfcity-hb.org

Submit Form

Water Uses

2010

Non-Potable Billed

Customer Type	Meter Accounts	Metered Water Delivered	Un-metered Accounts	Un-metered Water Delivered	Description

Non-Potable Un-Billed

Customer Type	Meter Accounts	Metered Water Delivered	Un-metered Accounts	Un-metered Water Delivered	Description

2009

2009

2009

2009

2009

2009

2009

Appendix G

City of Huntington Beach Ordinances –
Ch. 14.16 Water Use Regulations;
Ch. 14.18 Water Management Program;
Ch. 14.52 Water Efficient Landscape Requirements

Chapter 14.16

WATER USE REGULATIONS

(674-12/57, 1996-8/75, 2404-1/80, 2966-11/88, 3754-12/06)

Sections:

14.16.010 During fire. No person shall use any water for irrigation or any steady flow during the progress of any fire in the city unless for protection of property, and all irrigation and sprinkling shall immediately be stopped when an alarm of fire is sounded in any part of the city, and shall not be begun until the fire is extinguished. (674-12/57)

14.16.020 Waste from improper fixtures. No person shall waste water or allow it to be wasted by imperfect or leaking stops, valves, pipes, closets, faucets or other fixtures, or use water closets without self-closing valves, or use the water for purposes other than those named in the application upon which rates for water are based, or use it in violation of any of the provisions of any ordinance of this city, provided further that no person shall drain or permit water to drain upon any public street or alley, or over any private property not owned by such person. (674-12/57)

14.16.030 Meters--Property of city. All water service and water meters installed or required to be installed by the City Water Department shall remain at all times the property of the city and shall be maintained, repaired and renewed by the City Water Department when rendered unserviceable by normal wear and tear. (674-12/57)

14.16.040 Meters--Replacement or repair. Where replacements, repairs or adjustments of any meter are rendered necessary by an act resulting from malice, carelessness or neglect of the consumer or any member of his family, or any one employed by him, and any damage which may result from hot water, or steam from water heater, boiler or otherwise, shall be charged to and paid for by such consumer to the Water Department on presentation of a bill therefor; and in case such bill is not paid, the water shall be shut off from such premises and shall not be turned on again until all charges are paid. No person shall interfere with or remove from any service any water meter which has been so attached. (674-12/57)

14.16.050 Meters--Accuracy tests. Where the accuracy of record of a water meter is questioned, it shall be removed at the consumer's request and shall in his presence be tested in the shops of the Water Department by means of the apparatus there provided, and a report thereon
duly made. Both parties to the test must accept the findings so made. If the test discloses an error against the consumer of more than 3 percent of the meter's registry, the excess of the consumption on the 3 percent readings shall be credited to the consumer's meter account, and the Water Department will bear the entire expenses of the test, and the deposit required as hereinafter prescribed shall be returned. On the other hand, where no such error is found, the person who has requested the test shall pay the charge fixed for such test. (674-12/57)

14.16.060 Meters--Test deposit. Before making a test of any meter, the person requesting such a test shall, at the time of filing his request, make a deposit with the Water Department of the amount charged for such a test, subject to the conditions herein stated, which charges are fixed as follows:

for testing 5/8 inch meters	$10
for testing I inch meters	$10
for testing 1 1/2 inch meters	$20
for testing 2 inch meters	$20
for testing 3 inch meters	$80
for testing 4 inch meters	$105

No meter shall be removed, or in any way disturbed, nor the seal broken except in the presence of or under the direction of the Superintendent. (674-12/57, 1996-8/75)

14.16.070 Meters--Placement. All meters of the Water Department shall be placed at the curb line of the street or near the property line in alleys, whenever and wherever practicable, and be protected and maintained as a part of the operation of the department. (674-12/57)

14.16.080 Meters--Inside premises. Where a water meter is placed inside the premises of a consumer, for the convenience of the consumer, provisions shall be made for convenient meter reading and repairing by representatives of the department. Failure to make such provisions by the consumer shall be sufficient cause for removal of such meter at the option of the Superintendent of the department and the withholding of service until installation is made at the curb line as herein provided. (674-12/57)

14.16.090 Consumer's responsibility. The city shall in no way whatsoever be responsible for any damage to person or property because of any leakage, breakage or seepage from, or accident or damage to any meter or pipe situated within any private premises, and the city shall not be responsible for any leakage, breakage or seepage for any pipe situated between any meter properly installed at the curb and the private premises served thereby nor shall the city be responsible for or on account of any damage, injury or loss occasioned directly or indirectly by the existence of any meter or pipe situated upon private property. (674-12/57)

14.16.100 Fire hydrants--Maintenance. Public fire hydrants shall be placed, maintained and repaired by the Water Department. Any damage thereto by persons or agency other than representatives of the Fire and Water Departments, shall be a claim against the person or agency committing such damage, and the Superintendent shall take such action as may be necessary to collect the same. (674-12/57)

14.16.110 Fire hydrants--Use. Fire hydrants are provided for the sole purpose of extinguishing fires and shall be used otherwise only as herein provided for, and shall be opened and used only by the Water and Fire Departments or such persons as may be authorized to do so by the Chief of the Fire Department, or the Superintendent of the Water Department as herein provided. (674-12/57)

14.16.120 Fire hydrants--Permits for special use. All persons desiring to use water through fire hydrants, or other hydrants, owned or controlled by the city, shall be required to obtain a permit first from the Chief of the Fire Department; second, from the Superintendent of the Water Department, who shall issue no such permit to any person who has violated any of the provisions of this title or whose indebtedness to the city of water used or damage to hydrants or equipment is delinquent. All such persons having permit for use of water from the fire hydrants must provide hydrant wrenches for the operation of such fire hydrants. (674-12/57)

14.16.130 Fire hydrant--Use permit cancellation. Permit for the use of water through the fire hydrants of the city may be cancelled at the will of the Superintendent on evidence that the holder thereof is or has violated the privileges conveyed thereunder. Such notice of cancellation shall be in writing delivered or mailed to the persons to be notified and shall be immediately effective and enforced. (674-12/57)

14.16.140 Fire hydrants--Obstructing access. No person shall obstruct the access to any fire hydrant by placing around or thereon any stone, brick, lumber, dirt or other material or wilfully or carelessly injure the same, or open or operate any fire hydrant, or draw or attempt to draw water therefrom, except as provided in section 14.16.120. (674-12/57)

14.16.150 Pressure maintenance or shutoff. The Water Department shall not accept any responsibility for the maintenance of pressure and it reserves the right to shut off the water from any premises, or from any part of the distributing system, as long as necessary without notice to consumers, at any time of emergency, but in all cases of extensions or connections, the department shall notify occupants of the premises of the necessity of shutting off water and the probable length of time the water shall be so shut off before taking such action. (647-12/57)

14.16.160 Drawing water into steam boilers. No stationary steam boiler shall be connected directly with the water distribution system of the city, but in each and every case a suitable tank of storage capacity sufficient for a twelve (12) hour supply for said boiler shall be provided and the service pipe supplying the tank shall discharge directly into the top of the tank. (674-12/57)

14.16.170 Violations reported. It shall be the duty of the employees of the Police, fire and street departments to give vigilant aid to the Superintendent in the enforcement of the provisions of this chapter and to this end they shall report all violations thereof which come to their knowledge to the Water Department, and it shall be the duty of the Chief of the Fire Department to report immediately to the Superintendent, in case of fire in premises having metered service for fire protection purposes, that fire has occurred there. (674-12/57)

14.16.180 Sale of water outside city. It is unlawful for the City Water Department to sell water to consumers outside the city, or to allow any consumer outside the city to use any water furnished by the city system unless the City Council shall by resolution determine and declare as follows: a) that a surplus of water exists in excess of that required by the inhabitants of the city; or b) that the sale or use of water outside the city will enhance the health or safety of the public during the use of public property such as a public park, beach, or other facility owned or operated by a public agency. (674-12/57, 3754-12/06)

14.16.190 Protecting cross connections. The city shall maintain a Cross-Connection Control Program throughout the Huntington Beach Water System service area. Such program shall be established by the City Council pursuant to Resolution No. 5921, titled "A Resolution of the City Council of the City of Huntington Beach Establishing a Cross-Connection Control Program for the Huntington Beach Water System." (674-12/57, 2404-1/80, 2966-11/88)

Chapter 14.18

WATER MANAGEMENT PROGRAM

(3104-4/91, 3810-9/08, 3849-1/10)

Sections:

14.18.010 Title. (3104-4/91, 3849-1/10)

This chapter will be known as the City of Huntington Beach Water Conservation and Water Supply Shortage Program. (3104-4/91, 3849-1/10)

14.18.020 Purpose and Intent. (3104-4/91, 3849-1/10)

a. The purpose of this chapter is to establish a water conservation and supply shortage program that will reduce water consumption within the City of Huntington Beach through conservation, enable effective water supply planning, assure reasonable and beneficial use of water, prevent waste of water, and maximize the efficient use of water within the City of Huntington Beach to avoid and minimize the effect and hardship of water shortage to the greatest extent possible. (3104-4/91, 3849-1/10)

b. This chapter establishes permanent water conservation standards intended to alter behavior related to water use efficiency at all times and further establishes three levels of water supply shortage response actions to be implemented during times of declared water shortage or declared water shortage emergency, with increasing restrictions on water use in response to worsening drought or emergency conditions and decreasing supplies.
(3104-4/91, 3849-1/10)

14.18.030 Definitions. (3104-4/91, 3849-1/10)

a. For purposes of this Chapter, the following words and phrases shall have the meaning hereafter set forth unless a different meaning is clearly intended from the context in which such word or phrase is used. Any word or phrase not herein defined shall have the meaning attributed to it in ordinary usage. (3104-4/91, 3849-1/10)

1. **"Person"** means any natural person or persons, corporation, public or private entity, governmental agency or institution, including all agencies

and departments of City of Huntington Beach or any other user of water provided by City of Huntington Beach. (3104-4/91, 3849-1/10)

2. **"Landscape irrigation system"** means an irrigation system with pipes, hoses, spray heads, or sprinkling devices that are operated by hand or through an automated system. (3104-4/91, 3849-1/10)

3. **"Large landscape areas"** means a lawn, landscape, or other vegetated area, or combination thereof, equal to more than one (1) acre of irrigable land. (3104-4/91, 3849-1/10)

4. **"Single pass cooling systems"** means equipment where water is circulated only once to cool equipment before being disposed. (3104-4/91, 3849-1/10)

5. **"Potable water"** means water which is suitable for drinking. (3104-4/91, 3849-1/10)

6. **"Recycled water"** means the reclamation and reuse of non-potable water for beneficial use as defined in Title 22 of the California Code of Regulations. (3104-4/91, 3849-1/10)

7. **"Billing unit"** means the unit of water used to apply water rates for purposes of calculating water charges for a person's water usage and equals 748 gallons. (3104-4/91, 3849-1/10)

14.18.040 Application. (3104-4/91, 3849-1/10)

a. The provisions of this chapter apply to any person in the use of any potable water provided by the City of Huntington Beach. (3104-4/91, 3849-1/10)

b. The provisions of this chapter do not apply to uses of water necessary to protect public health and safety or for essential government services, such as police, fire and other similar emergency services. (3104-4/91, 3849-1/10)

c. The provisions of this chapter do not apply to the use of recycled water, with the exception of Section 14.18.050(a). (3104-4/91, 3849-1/10)

d. The provisions of this chapter do not apply to the use of water by commercial nurseries and commercial growers to sustain plants, trees, shrubs, crops or other vegetation intended for commercial sale. (3104-4/91, 3849-1/10)

e. This chapter is intended solely to further the conservation of water. It is not intended to implement any provision of Federal, State, or local statutes, ordinances, or regulations relating to protection of water quality or control of drainage or runoff. Refer to the local jurisdiction or Regional Water Quality Control Board for information on any stormwater ordinances and stormwater management plans. (3104-4/91, 3849-1/10)

14.18.050 Permanent Water Conservation Requirements – Prohibition Against Waste.

(3104-4/91, 3810-9/08, 3849-1/10)

The following water conservation requirements are effective at all times and are permanent. Violations of this section will be considered waste and an unreasonable use of water. (3104-4/91, 3810-9/08, 3849-1/10)

a. Limits on Watering Hours: Watering or irrigating of lawn, landscape or other vegetated area with potable water is prohibited between the hours of 9:00 a.m. and 5:00 p.m. Pacific Standard Time on any day, except by use of a hand-water shut-off nozzle or device, or for very short periods of time for the express purpose of adjusting or repairing an irrigation system. (3104-4/91, 3810-9/08, 3849-1/10)

b. Limit on Watering Duration: Watering or irrigating of lawn, landscape or other vegetated area with potable water using a landscape irrigation system or a watering device that is not continuously attended is limited to no more than fifteen (15) minutes watering per day per station. This subsection does not apply to landscape irrigation systems that exclusively use very low-flow drip type irrigation systems when no emitter produces more than two (2) gallons of water per hour and weather based controllers or steam rotor sprinklers that meet a 70% efficiency standard. (3104-4/91, 3810. 9/08, 3849-1/10)

c. No Excessive Water Flow or Runoff: Watering or irrigating of any lawn, landscape or other vegetated area in a manner that causes or allows excessive water flow or runoff onto an adjoining sidewalk, driveway, street, alley, gutter or ditch is prohibited. (3104-4/91, 3810-9/08, 3849-1/10)

d. No Washing Down Hard or Paved Surfaces: Washing down hard or paved surfaces, including but not limited to sidewalks, walkways, driveways, parking areas, tennis courts, patios or alleys, is prohibited except when necessary to alleviate safety or sanitary hazards, and then only by use of a hand-held bucket or similar container, a hand-held hose equipped with a positive self-closing water shut-off device, a low-volume, high-pressure cleaning machine equipped to recycle any water used, or a low-volume high-pressure water broom. (3104-4/91, 3810-9/08, 3849-1/10)

e. Obligation to Fix Leaks, Breaks or Malfunctions: Excessive loss or escape of water through breaks, leaks or other malfunctions in the water user's plumbing or distribution system for any period of time after such escape of water should have reasonably been discovered and corrected and in no event more than seven (7) days of receiving notice from the City of Huntington Beach, is prohibited. (3104-4/91, 3810-9/08, 3849-1/10)

f. Re-circulating Water Required for Water Fountains and Decorative Water Features: Operating a water fountain or other decorative water feature that does not use re-circulated water is prohibited. (3104-4/91, 3810-9/08, 3849-1/10)

g. Limits on Washing Vehicles: Use water to wash or clean a vehicle, including but not limited to any automobile, truck, van, bus, motorcycle, boat or trailer, whether motorized or not is prohibited, except by use of a hand-held bucket or similar container or a hand-held hose equipped with a positive self-closing water shut-off nozzle or device. This subsection does not apply to any commercial car washing facility. (3104-4/91, 3810-9/08, 3849-1/10)

h. Drinking Water Served Upon Request Only: Eating or drinking establishments, including but not limited to a restaurant, hotel, café, cafeteria, bar, or other public place where food or drinks are sold, served, or offered for sale, are prohibited from providing drinking water to any person unless expressly requested. (3104-4/91, 3810-9/08, 3849-1/10)

i. Commercial Lodging Establishments Must Provide Guests Option to Decline Daily Linen Services: Hotels, motels and other commercial lodging establishments must provide customers the option of not having towels and linen laundered daily. Commercial lodging establishments must prominently display notice of this option in each bathroom using clear and easily understood language. (3104-4/91, 3810-9/08, 3849-1/10)

j. No Installation of Single Pass Cooling Systems to Domestic Water Supplies: Installation of single pass cooling systems is prohibited in buildings requesting new water service. (3104-4/91, 3810-9/08, 3849-1/10)

k. No Installation of Non-re-circulating in Commercial Car Wash and Laundry Systems: Installation of non-recirculating water systems is prohibited in new commercial conveyor car wash and new commercial laundry systems. (3104-4/91, 3810-9/08, 3849-1/10)

l. Restaurants Required to Use Water Conserving Dish Wash Spray Valves: Food preparation establishments, such as restaurants or cafes, are prohibited from using non-water conserving dish wash spray valves. (3104-4/91, 3810-9/08, 3849-1/10)

m. Commercial Car Wash Systems: Effective on January 1, 2010, all new commercial conveyor car wash systems must have installed operational re-circulating water systems, or must have secured a waiver of this requirement from the City of Huntington Beach. (3104-4/91, 3810-9/08, 3849-1/10)

14.18.060 Level 1 Water Supply Shortage. (3104-4/91, 3849-1/10)

a. A Level 1 Water Supply Shortage exists when the City of Huntington Beach determines, in its sole discretion, that due to drought or other water supply conditions, a water supply shortage or threatened shortage exists and a consumer demand reduction is necessary to make more efficient use of water and appropriately respond to existing water conditions. Upon the declaration by the City of Huntington Beach of a Level 1 Water Supply Shortage condition, the City of Huntington Beach will implement the mandatory Level 1 conservation measures identified in this section. (3104-4/91, 3849-1/10)

b. Additional Water Conservation Measures: In addition to the prohibited uses of water identified in Section 14.18.050, the following water conservation requirements apply during a declared Level 1 Water Supply Shortage: (3104-4/91, 3849-1/10)

1. Limits on Watering Days: Watering or irrigating of lawn, landscape or other vegetated area with potable water is limited to three days per week on a schedule established and posted by the City of Huntington Beach. During the months of November through March, watering or irrigating of lawn, landscape or other vegetated area with potable water is limited to no more than one day per week on a schedule established and posted by the City of Huntington Beach. This provision does not apply to landscape

irrigation zones that exclusively use very low flow drip type irrigation systems when no emitter produces more than two (2) gallons of water per hour. This provision also does not apply to watering or irrigating by use of a hand-held bucket or similar container, a hand-held hose equipped with a positive self-closing water shut-off nozzle or device, or for very short periods of time for the express purpose of adjusting or repairing an irrigation system. (3104-4/91, 3849-1/10)

2. Obligation to Fix Leaks, Breaks or Malfunctions: All leaks, breaks, or other malfunctions in the water user's plumbing or distribution system must be repaired within seventy-two (72) hours of notification by the City of Huntington Beach unless other arrangements are made with the City of Huntington Beach. (3104-4/91, 3849-1/10)

14.18.070 Level 2 Water Supply Shortage. (3104-4/91, 3849-1/10)

a. A Level 2 Water Supply Shortage exists when the City of Huntington Beach determines, in its sole discretion that due to drought or other water supply conditions, a water supply shortage or threatened shortage exists and a consumer demand reduction is necessary to make more efficient use of water and approximately respond to existing water conditions. Upon the declaration by the City of Huntington Beach of a Level 2 Water Supply Shortage condition, the City of Huntington Beach will implement the mandatory Level 2 conservation measures identified in this section. (3104-4/91, 3849-1/10)

b. Additional Conservation Measures: In addition to the prohibited uses of water identified in Section 14.18.050 and 14.18.060, the following additional water conservation requirements apply during a declared Level 2 Water Supply Shortage: (3104-4/91, 3849-1/10)

1. Watering Days: Watering or irrigating of lawn, landscape or other vegetated area with potable water is limited to two days per week on a schedule established and posted by the City of Huntington Beach. During the months of November through March, watering or irrigating of lawn, landscape or other vegetated area with potable water is limited to no more than one day per week on a schedule established and posted by the City of Huntington Beach. This provision does not apply to landscape irrigation zones that exclusively use very low flow drip type irrigation systems when no emitter produces more than two (2) gallons of water per hour. This provision also does not apply to watering or irrigating by use of a hand-held bucket or similar container, a hand-held hose equipped with a positive self-closing water shut-off nozzle or device, or for very short periods of time for the express purpose of adjusting or repairing an irrigation system. (3104-4/91, 3849-1/10)

2. Obligation to Fix Leaks, Breaks or Malfunctions: All leaks, breaks, or other malfunctions in the water user's plumbing or distribution system must be repaired within forty-eight (48) hours of notification by the City of Huntington Beach unless other arrangements are made with the City of Huntington Beach. (3104-4/91, 3849-1/10)

3. Limits on Filling Ornamental Lakes or Ponds: Filling or re-filling ornamental lakes or ponds is prohibited, except to the extent needed to sustain aquatic life, provided that such animals are of significant value and

have been actively managed within the water feature prior to declaration of a supply shortage level under this ordinance. (3104-4/91, 3849-1/10)

4. Limits on Washing Vehicles: Using water to wash or clean a vehicle, including but not limited to, any automobile, truck, van, bus, motorcycle, boat or trailer, whether motorized or not, is prohibited except by use of a hand-held bucket or similar container, a hand-held hose equipped with a positive self-closing water shut-off nozzle or device, by high pressure/low volume wash systems, or at a commercial car washing facility that utilizes a re-circulating water system to capture or reuse water. (3104-4/91, 3849-1/10)

5. Limits on Filling Residential Swimming Pools & Spas: Re-filling of more than one foot and initial filling of residential swimming pools or outdoor spas with potable water is prohibited. (3104-4/91, 3849-1/10)

14.18.080 Level 3 Water Supply Shortage – Emergency Condition. (3849-1/10)

a. A Level 3 Water Supply Shortage condition is also referred to as an "Emergency" condition. A Level 3 condition exists when the City of Huntington Beach declares a water shortage emergency and notifies its residents and businesses that a significant reduction in consumer demand is necessary to maintain sufficient water supplies for public health and safety. Upon the declaration of a Level 3 Water Supply Shortage condition, the City of Huntington Beach will implement the mandatory Level 3 conservation measures identified in this section. (3849-1/10)

b. Additional Conservation Measures: In addition to the prohibited use of water identified in Section 14.18.050, 14.18.060 and 14.18.070, the following water conservation requirements apply during a declared Level 3 Water Supply Shortage Emergency: (3849-1/10)

1. Watering or Irrigating: Watering or irrigating of lawn, landscape or other vegetated area with potable water is prohibited. This restriction does not apply to the following categories of use, unless the City of Huntington Beach has determined that recycled water is available and may be applied to the use: (3849-1/10)

i. Maintenance of vegetation, including trees and shrubs, that are watered using a hand-held bucket or similar container, hand-held hose equipped with a positive self-closing water shut-off nozzle or device; (3849-1/10)

ii. Maintenance of existing landscape necessary for fire protection; (3849-1/10)

iii. Maintenance of existing landscape for soil erosion control; (3849-1/10)

iv. Maintenance of plant materials identified to be rare or essential to the well-being of protected species; (3849-1/10)

v. Maintenance of landscape with active public parks and playing fields, day care centers, golf course greens, and school grounds, provided that such irrigation does not exceed two (2) days per week according to the schedule established in Section

14.18.070(b)(1) and time restrictions in Section 14.18.050(a) and 14.18.060(b)(1); (3849-1/10)

vi. Actively irrigated environmental mitigation projects. (3849-1/10)

2. Obligation to Fix Leaks, Breaks or Malfunctions: All leaks, breaks, or other malfunctions in the water user's plumbing or distribution system must be repaired within twenty-four (24) hours of notification by the City of Huntington Beach unless other arrangements are made with the City of Huntington Beach. (3849-1/10)

3. a. New Potable Water Service: Upon declaration of a Level 3 Water Supply Shortage Emergency condition, no new potable water service will be provided, no new temporary meters or permanent meters will be provided, and no statements of immediate ability to serve or provide potable water service (such as, will-serve letters, certificates, or letters of availability) will be issued, except under the following circumstances: (3849-1/10)

1. A valid, unexpired building permit has been issued for the project; or (3849-1/10)

2. The project is necessary to protect the public health, safety, and welfare; or (3849-1/10)

3. The applicant provides substantial evidence of an enforceable commitment that water demands for the project will be offset prior to the provision of a new water meter(s) to the satisfaction of the City of Huntington Beach. (3849-1/10)

This provision does not preclude the resetting or turn-on of meters to provide continuation of water service or the restoration of service that has been interrupted for a period of one year or less. (3849-1/10)

Or

b. Limits on Building Permits: The City of Huntington Beach will limit or withhold the issuance of building permits which require new or expanded water service, except to protect the public health, safety and welfare, or in cases which meet the City of Huntington Beach's adopted conservation offset requirements. (3849-1/10)

4. Discontinue Service: The City of Huntington Beach, in its sole discretion, may discontinue service to consumers who willfully violate provisions of this section. (3849-1/10)

5. New Annexations: Upon the declaration of a Level 3 Water Supply Shortage condition, the City of Huntington Beach will suspend consideration of annexations to its service area. This subsection does not apply to boundary corrections and annexations that will not result in any increased use of water. (3849-1/10)

14.18.090 Procedures for Determination and Notification of Water Supply Shortage. (3849-1/10)

a. The City's Director of Public Works and the City Administrator, or their designated representatives, are authorized and directed by the City Council to implement the provisions of this Chapter. The Director of Public Works shall make such rules and regulations as may be necessary, reasonable and proper to enforce the provisions of this Code. A copy of any rule or regulation promulgated by the Director shall be provided to the City Council. (3849-1/10)

b. The City shall monitor the projected supply and demand for water by its customers. The Director of Public Works shall determine the extent of the conservation required through the implementation and/or termination of particular conservation stages in order for the City to prudently plan for and supply water to its customers. The existence of Level 1, Level 2 or Level 3 water supply shortage conditions shall be declared by Resolution of the City of Huntington Beach adopted at a regular or special public meeting held in accordance with state law. The mandatory conservation requirements applicable to Level 1, Level 2 or Level 3 conditions, will take effect on the tenth day after the date the shortage level is declared. Within five (5) days following the declaration of the shortage level, the City of Huntington Beach shall publish a copy of the Resolution in a newspaper used for publication of official notices. If the City of Huntington Beach activates a water allocation process, it shall provide notice of the activation by including it in the regular billing statement or by any other mailing to the address to which the City of Huntington Beach customarily mails the billing statement for fees or charges for on-going water service. A water allocation process will be effective on the fifth day following the date of mailing or at such later date as specified in the notice. (3849-1/10)

c. In case of local emergencies as defined under the Huntington Beach Municipal Code, the City Administrator shall have the authority to order the implementation of the appropriate level of water conservation subject to ratification by the City Council within seven (7) days thereafter or such order shall have no further force or effect. (3849-1/10)

14.18.100 Hardship Waiver. (3849-1/10)

a. Undue and Disproportionate Hardship: If, due to unique circumstances, a specific requirement of this chapter would result in undue hardship to a person using water or to property upon which water is used, that is disproportionate to the impacts to water users generally or to similar property or classes of water users, then the person may apply to the City Administrator for a waiver to the requirements as provided in this section. (3849-1/10)

b. Written Finding: The waiver may be granted or conditionally granted only upon a written finding of the existence of facts demonstrating an undue hardship to a person using water or to property upon which water is used, that is disproportionate to the impacts to water users generally or to similar property or classes of water use due to specific and unique circumstances of the user or the user's property. (3849-1/10)

1. Application: Application for a waiver must be on a form prescribed by the City of Huntington Beach and accompanied by a non-refundable processing fee in an amount set by City of Huntington Beach resolution of the City Council. (3849-1/10)

2. Supporting Documentation: The application must be accompanied by photographs, maps, drawings, and other information, including a written statement of the applicant. (3849-1/10)

3. Required Findings for Waiver: An application for a waiver will be denied unless the City Administrator finds, based on the information provided in the application, supporting documents, or such additional information as may be requested, and on water use information for the property as shown by the records of the City of Huntington Beach or its Agent, all of the following: (3849-1/10)

   i. That the waiver does not constitute a grant of special privilege inconsistent with the limitations upon other residents and businesses; (3849-1/10)

   ii. That because of special circumstances applicable to the property or its use, the strict application of this chapter would have a disproportionate impact on the property or use that exceeds the impacts to residents and businesses generally; (3849-1/10)

   iii. That the authorizing of such waiver will not be of substantial detriment to adjacent properties, and will not materially affect the ability of the City of Huntington Beach to effectuate the purpose of this chapter and will not be detrimental to the public interest; and (3849-1/10)

4. Approval Authority: The City Administrator shall act upon any completed application no later than ten (10) days after submittal and may approve, conditionally approve, or deny the waiver. The applicant requesting the waiver shall be promptly notified in writing of any action taken. Unless specified otherwise at the time a waiver is approved, the waiver will apply to the subject property during the period of the mandatory water supply shortage condition. The decision of the City Administrator will be final. (3849-1/10)

14.18.110 Violation – Penalty. (3849-1/10)

a. Any person violating this chapter shall be guilty of a misdemeanor, punishable by a fine not exceeding one thousand dollars ($1,000) or by imprisonment in the county jail for a period not to exceed six (6) months, or by both fine and imprisonment. Each day that a violation of this ordinance occurs is a separate offense. (3849-1/10)

b. In addition to any fines, the City may install a water flow restrictor device of approximately one gallon per minute capacity for service up to one and one-half inch size and comparatively sized restrictors for larger services after written notice of intent to install a flow restrictor for a minimum of forty-eight (48) hours. (3849-1/10)

c. A person or entity that violates this ordinance is responsible for payment of the City's charges for installing and/or removing any flow restricting device and for disconnecting and/or reconnecting service per the City's schedule of charges then in effect. The charge for installing and/or removing any flow restricting device

must be paid to the City before the device is removed. Nonpayment will be subject to the same remedies as nonpayment of basic water rates. (3849-1/10)

d. In addition to any fines and the installation of a water flow restrictor, the City may disconnect a customer's water service for willful violations of mandatory restrictions in this chapter. (3849-1/10)

14.18.120 Severability. (3849-1/10)

If any section, subsection, sentence, clause or phrase in this chapter is for any reason held invalid, the validity of the remainder of the chapter will not be affected. The City of Huntington Beach hereby declares it would have passed this chapter and each section, subsection, sentence, clause or phrase thereof, irrespective of the fact that one or more sections, subsections, sentences, clauses, or phrases or is declared invalid. (3849-1/10)

Chapter 14.52

WATER EFFICIENT LANDSCAPE REQUIREMENTS

(3183-2/93, 3854-2/10)

Sections:

14.52.010 Purpose and Intent. The purpose of this chapter is to: (3183-2/93)

(a) Promote the values and benefits of landscapes while recognizing the need to use water and other resources as efficiently as possible; (3183-2/93)

(b) Establish a structure for planning, designing, installing, maintaining and managing water efficient landscapes in new and rehabilitated landscape projects; (3183-2/93, 3854-2/10)

(c) Establish provisions for water management practices and water waste prevention for new and existing landscapes; (3183-2/93, 3854-2/10)

(d) Establish a long range goal of water efficiency through proper planning and design, the use of technologically current equipment with proper installation, continued maintenance and monitoring of water use through the designed systems; (3183-2/93)

(e) When used in conjunction with the "Arboricultural and Landscape Standards and Specifications" Resolution Number 4545, to give the Landscape Architect and/or owner the tools to provide an individualized landscape improvement to suit the needs of the owner and the requirements of the city; and (3183-2/93)

(f) To provide standards for a finished landscape that is physically attractive, conserves water and is easy to maintain. (3183-2/93)

14.52.020 Definitions. For purposes of this chapter, the following words and phrases have the meaning hereafter set forth unless a different meaning is clearly intended from the context in which such word or phrase is used. Any word or phrase not herein defined shall have the meaning attributed to it in ordinary usage. (3183-2/93, 3854-2/10)

(a) "anti-drain valve" or "check valve" means a valve located in a lateral line or under a sprinkler head to hold water in the system so it prevents drainage from the lower elevation sprinkler heads when the system is off. (3183-2/93, 3854-2/10)

(b) "application rate" means the depth of water applied to a given area, usually measured in inches per minute, inches per hour or gallons per minute or gallons per hour. (3183-2/93, 3854-2/10)

(c) "applied water" means the portion of water supplied by the irrigation system to the landscape. (3183-2/93)

(d) “arboricultural and landscape specifications and standards” means the standards adopted by resolution of the City Council governing the planting, maintenance, removal, fertilization, pruning and bracing of trees. (3183-2/93, 3854-2/10)

(e) “automatic irrigation controller” means a mechanical or solid state timer or an automatic timing device capable of operating valve stations to set the days and length of time of a water application in an irrigation system. Smart automatic irrigation controllers schedule irrigation events using either evapotranspiration (weather-based) or soil moisture data. (3183-2/93, 3854-2/10)

(f) "backflow prevention device" means a safety device used to prevent pollution or contamination of the water supply due to the reverse flow of water from the irrigation system. (3183-2/93, 3854-2/10)

(g) “Certification of Design” means the certification included as Appendix A of these Guidelines that must be included in the Landscape Documentation Package. (3183-2/93, 3854-2/10)

(h) “City” means the City of Huntington Beach or its authorized designee. (3183-2/93, 3854-2/10)

(i) “common interest development” means community apartment projects, condominium projects, planned developments, and stock cooperatives per Civil Code Section 1351. (3183-2/93, 3854-2/10)

(j) "conversion factor (0.62)" means the number that converts the maximum applied water allowance from acre-inches per acre per year to gallons per square foot per year. The conversion factor is calculated as follows: (3183-2/93, 3854-2/10)

(325,850 gallons/43,560 square feet)/12 inches	=	(0.62)
325,850 gallons	=	one acre foot
43,560 square feet	=	one acre
12 inches	=	one foot

To convert gallons per year to 100-cubic feet per year, the city's billing unit for water, divide gallons per year by 748. (748 gallons = 100 cubic feet.) (3183-2/93, 3854-2/10)

(k) “Distribution Uniformity” or “DU” is a measure of how uniformly an irrigation head applies water to a specific target area and theoretically ranges form zero to 100 percent. (3183-2/93, 3854-2/10)

(l) “drip irrigation” means any non-spray low volume irrigation system utilizing emission devices with a flow rate measured in gallons per hour. Low volume irrigation systems

are specifically designed to apply small volumes of water slowly at or near the root zone of plants. (3183-2/93, 3854-2/10)

(m) "drought tolerant" means plant material which, when established in the landscape, is able to grow and survive on little or no additional water than is provided by rainfall. (3183-2/93, 3854-2/10)

(n) "ecological restoration project" means a project where the site is intentionally altered to establish a defined, indigenous, historic ecosystem. (3183-2/93, 3854-2/10)

(o) "effective precipitation" or "usable rainfall" means the portion of total precipitation that is used by the plants. (3183-2/93, 3854-2/10)

(p) "emitter" means drip irrigation fittings or devices that deliver water slowly from the system to the soil. (3183-2/93, 3854-2/10)

(q) "established landscape" means the point at which plants in the landscape have developed roots into the soil adjacent to the root ball. (3183-2/93, 3854-2/10)

(r) "establishment period" means the first year after installing the plant in the landscape. (3183-2/93, 3854-2/10)

(s) "estimated total water use" means the annual total amount of water estimated to be needed to keep the plants in the landscaped area healthy. It is based upon such factors as the local evapotranspiration rate, the size of the landscaped area, the types of plants and the efficiency of the irrigation system, as described in this chapter. (3183-2/93, 3854-2/10)

(t) “Estimated Applied Water Use” (EAWU) means the average annual total amount of water estimated to be necessary to keep plants in a healthy state, calculated as provided in the Guidelines. It is based on the reference evapotranspiration rate, the size of the landscape area, plant water use factors, and the relative irrigation efficiency of the irrigation system. (3183-2/93, 3854-2/10)

(u) “ET adjustment factor” (ETAF) is equal to the Plant Factor divided by the Irrigation Efficiency Factor for a landscape project. The ETAF is calculated in the context of local reference evapotranspiration, using site-specific plant factors and irrigation efficiency factors that influence the amount of water that needs to be applied to the specific landscaped area. A combined plant mix with a site-wide average Plant Factor of 0.5 (indicating a moderate water need) and average irrigation efficiency of 0.71 produces an ET Adjustment Factor of (0.7) = (0.5/0.71), which is the standard of water use efficiency generally required by this ordinance and the Guidelines; except that the ETAF for a Special Landscape Area shall not exceed 1.0. (3183-2/93, 3854-2/10)

(v) "evapotranspiration" ET means the quantity of water evaporated from adjacent soil surfaces and transpired by plants during a specific time. (The City of Huntington Beach reference evapotranspiration is approximately forty-three (43) inches per year.) (3183-2/93, 3854-2/10)

(w) "flow rate" means the rate at which water flows through pipes and valves (gallons per minute or cubic feet per second). (3183-2/93, 3854-2/10)

(x) “Guidelines” refers to the Guidelines for Implementation of Water Efficient Landscape Ordinance, as adopted by the local agency, which describes procedures, calculations and requirements for landscape projects subject to this ordinance. (3183-2/93, 3854-2/10)

(y) “hardscapes” means any durable material or feature (pervious and non-pervious) installed in or around a landscaped area, such as pavements or walls. Pools and other water features are considered part of the landscaped area and not considered hardscapes for purposes of this ordinance. (3183-2/93, 3854-2/10)

(z) “homeowner-installed landscaping” means any landscaping either installed by a private individual for a single family residence or installed by a licensed contractor hired by a homeowner. A homeowner, for purposes of this ordinance, is a person who occupies the dwelling he or she owns. This definition excludes speculative homes, which are not owner-occupied dwellings, and which are subject under this ordinance to the requirements applicable to developer-installed residential landscape projects. (3183-2/93, 3854-2/10)

(aa) "hydrozone" means a portion of the landscaped area having plants with similar water needs that are served by a valve or set of valves with the same schedule. A hydrozone may be irrigated or non-irrigated. For example, a naturalized area planted with native vegetation that will not need supplemental irrigation once established is a non-irrigated hydrozone. (3183-2/93, 3854-2/10)

(bb) "infiltration rate" means the rate of water entry into the soil expressed as a depth of water per unit of time (inches per hour). (3183-2/93, 3854-2/10)

(cc) “invasive plants species” or “noxious” means species of plants not historically found in California that spread outside cultivated areas and can damage environmental or economic resources. Invasive plant species may be regulated by county agricultural agencies as noxious species. (3183-2/93, 3854-2/10)

(dd) “irrigation audit” or “landscape irrigation audit” means an in-depth evaluation of the performance of an irrigation system conducted by a State Regulated and Certified Landscape Irrigation Auditor. An irrigation audit means a process to perform a site inspection that includes, but is not limited to: inspection, system tune-up, system test with catchment for distribution uniformity or emission uniformity, reporting overspray or runoff that causes overland flow, and preparation of an irrigation schedule. (3183-2/93, 3854-2/10)

(ee) “irrigation efficiency” (IE) means the measurement of the amount of water beneficially used divided by the amount of water applied. Irrigation efficiency is derived from measurements and estimates of irrigation system characteristics and management practices. The minimum average irrigation efficiency for purposes of this ordinance is 0.71. Greater irrigation efficiency can be expected from well designed and maintained systems. (3183-2/93, 3854-2/10)

(ff) “Irrigation Management Efficiency” or “IME” means the measurement used to calculate the irrigation efficiency of the irrigation system for a landscaped project. A 90% IME can be achieved by using evaportranspiration controllers, soil moisture sensors, and other methods that will adjust irrigation run times to meet plant water needs. (3183-2/93, 3854-2/10)

(gg) “landscape coefficient” means the estimate of water loss from landscape plantings determined by the use of a formula. It is the product of the plant species factor, the plant material density factor, and the microclimate factor. The formula is: landscape coefficient = species factor x density factor x microclimate factor. (3183-2/93, 3854-2/10)

(hh) “landscape contractor” means a person licensed by the state of California to construct, maintain, repair, install, or subcontract the development of landscape systems. (3183-2/93, 3854-2/10)

(ii) “Landscape Documentation Package” means the documents required to be provided to the City for review and approval of landscape design projects. (3183-2/93, 3854-2/10)

(jj) “landscape professional” means a licensed landscape architect, licensed landscape contractor, or any other person authorized to design a landscape pursuant to Sections 5500.1, 5615, 5641, 5641.1, 5641.2, 5641.3, 5641.4, 5641.5, 5641.6, 6701, 7027.5 of the California Business and Professions Code, Section 832.27 of Title16 of the California Code of Regulations, and Section 6721 of the California Food and Agriculture Code. (3183-2/93, 3854-2/10)

(kk) “landscape project” means total area of landscape in a project as defined in “landscape area” for the purposes of this ordinance. (3183-2/93, 3854-2/10)

(ll) “landscaped area” means all the planting areas, turf areas, and water features in a landscape design plan subject to the Maximum Applied Water Allowance and Estimated Applied Water Use calculations. The landscape area does not include footprints of buildings or structures, sidewalks, driveways, parking lots, decks, patios, gravel or stone walks, other pervious or non-pervious hardscapes, and other nonirrigated areas designated for non-development (e.g., open spaces and existing native vegetation). (3183-2/93, 3854-2/10)

(mm) "lateral line" means the water delivery pipeline that supplies water to the emitters or sprinklers from the valve. (3183-2/93, 3854-2/10)

(nn) “low volume overhead irrigation” means above ground irrigation heads with an upper flow limit of 0.5 gallons per minute. (3183-2/93, 3854-2/10)

(oo) "main line" means the pressurized pipeline that delivers water from the water source to the valve or outlet. (3183-2/93, 3854-2/10)

(pp) “Maximum Applied Water Allowance”(MAWA) means, the upper limit of annual applied water for the established landscaped area. It is based upon the area’s reference evapotranspiration, the ET Adjustment Factor, and the size of the landscaped area. The Estimated Applied Water Use shall not exceed the Maximum Applied Water Allowance. Special Landscape Areas, including recreation areas, areas permanently and solely dedicated to edible plants such as orchards and vegetable gardens, and areas irrigated with recycled water are subject to the MAWA with an ETAF not to exceed 1.0. (3183-2/93, 3854-2/10)

(qq) "mined-land reclamation projects" means any surface mining operation with a reclamation plan approved in accordance with the Surface Mining and Reclamation Act of 1975. (3183-2/93, 3854-2/10)

(rr) "mulch" means any material such as sawdust, bark or other materials left loose and applied to the soil surface to reduce evaporation. (3183-2/93, 3854-2/10)

(ss) “new construction” means, for the purposes of this ordinance, a new building with a landscape or other new landscape such as a park, playground or greenbelt without an associated building. (3183-2/93, 3854-2/10)

(tt) “non-pervious” means any surface or natural material that does not allow for the passage of water through the material and into the underlying soil. (3183-2/93, 3854-2/10)

(uu) "operating pressure" means the pressure at which a system of sprinklers is designed by the manufacturer to operate, usually referenced to the base of a sprinkler. (3183-2/93, 3854-2/10)

(vv) "overspray" means the water which is delivered beyond the targeted landscaped area, wetting pavements, walks, structures, or other non-landscaped areas. (3183-2/93, 3854-2/10)

(ww) “permit” means an authorizing document issued by the City for new construction or rehabilitated landscape. (3854-2/10)

(xx) “Person” means any natural person, firm, joint venture, joint stock company, partnership, public or private association, club, company, corporation, business trust, organization, public or private agency, government agency or institution, school district, college, university, any other user of water provided by the City or the local water purveyor, or the manager, lessee, agent, servant, officer, or employee of any of them or any other entity which is recognized by law as the subject of rights or duties. (3854-2/10)

(yy) “pervious” means any surface or material that allows the passage of water through the material and into the underlying soil. (3854-2/10)

(zz) “plant factor” or “plant water use factor” is a factor, when multiplied by ETo, estimates the amount of water needed by plants. For purposes of this ordinance, the plant factor range for low water use plants is 0 to 0.3, the plant factor range for moderate water use plants is 0.4 to 0.6, and the plant factor range for high water use plants is 0.7 to 1.0. Plant factors cited in this ordinance are derived from the Department of Water Resources 2000 publication “Water Use Classification of Landscape Species.” (3183-2/93, 3854-2/10)

(aaa) “precipitation rate” means the rate of application of water measured in inches per hour. (3854-2/10)

(bbb) “project applicant” means the person submitting a Landscape Documentation Package required to request a permit, plan check, or design review from the City. A project applicant may be the property owner or his or her designee. (3854-2/10)

(ccc) “Property owner” or “owner” means the record owner of real property as shown on the most recently issued equalized assessment roll. (3854-2/10)

(ddd) "rain sensing device" or “rain sensing override device” means a system which automatically shuts off the irrigation system when it rains. (3183-2/93, 3854-2/10)

(eee) "record drawing" or "as-builts" means a set of reproducible drawings which show significant changes in the work made during construction and which are usually based on drawings marked up in the field and other data furnished by the contractor. (3183-2/93, 3854-2/10)

(fff) "recreational area" means areas of active play or recreation such as sports fields, school yards, picnic grounds, or other areas with intense foot traffic. (3183-2/93, 3854-2/10)

(ggg) “recycled water” or “reclaimed water” means treated or recycled waste water of a quality suitable for non-potable uses such as landscape irrigation and water features. This water is not intended for human consumption. (3183-2/93, 3854-2/10)

(hhh) "reference evapotranspiration" or "ETo" means a standard measurement of environmental parameters which affect the water use of plants. ETo is given in inches per day, month, or year as represented in this chapter and is an estimate of the evapotranspiration of a large field of four (4)- to seven (7)-inch tall, cool-season grass that is well watered. Reference evapotranspiration is used as the basis of determining the maximum applied water allowance so that regional differences in climate can be accommodated. (3183-2/93, 3854-2/10)

(iii) "rehabilitated landscape" means any relandscaping project public or private that requires city processing, or is a condition of approval for a specific project. (3183-2/93, 3854-2/10)

(jjj) "run off" means water which is not absorbed by the soil or landscape to which it is applied and flows from the area. For example, run off may result from water that is applied at too great a rate (application rate exceeds infiltration rate) or when there is a severe slope. (3183-2/93, 3854-2/10)

(kkk) “slope” means the inclined surface of the ground or a roof, generally described as a percentage or ratio of horizontal to vertical distances. For example, a 25% slope gradient is a surface incline with a ratio of four feet horizontal to one foot in height, or a 4 to 1 slope. (3854-2/10)

(lll) "soil moisture sensing device" means a device that measures the amount of water in the soil. (3183-2/93, 3854-2/10)

(mmm) "soil texture" means the classification of soil based on the percentage of sand, silt, and clay in the soil. (3183-2/93, 3854-2/10)

(nnn) “Special Landscape Area”(SLA) means an area of the landscape dedicated solely to edible plants, areas irrigated with recycled water, water features using recycled water and areas dedicated to active play such as parks, sports fields, golf courses, and where turf provides a playing surface. (3854-2/10)

(ooo) “Special Sub-surface Construction” means the products, procedures and results required to provide an adequate tree rooting space that will allow larger trees to be grown in normal tree planting areas and allow the roots from those trees to grow in such a manner that they will not impact the street or infrastructure negatively for an extended period of time. (3854-2/10)

(ppp) "sprinkler head" means a device which sprays water through a nozzle. (3183-2/93, 3854-2/10)

(qqq) "static water supply pressure" means static water supply pressure when water is not flowing. (3183-2/93, 3854-2/10)

(rrr) "station" means an area served by one valve or by a set of valves that are operated simultaneously by an automatic controller. (3183-2/93, 3854-2/10)

(sss) “Swing joint” means an irrigation component that provides a flexible, leak-free connection between the emission device and lateral pipeline to allow movement in any direction and to prevent equipment damage. (3854-2/10)

(ttt) "turf" means a surface layer of earth containing mowed grass with its roots. Annual bluegrass, Kentucky bluegrass, Perennial ryegrass, Red fescue, and Tall fescue are cool-

season grasses. Bermuda grass, Kikuyugrass, Seashore paspalum, St. Augustine grass, Zoysiagrass, and Buffalo grass are warm-season grasses. (3183-2/93, 3854-2/10)

(uuu) "valve" means a device used to control the flow of water in the irrigation system. (3183-2/93, 3854-2/10)

(vvv) "water efficient" means a combination of landscape features and watering techniques that in the aggregate reduce the demand for and consumption of water. Water efficient also means the result of selecting plant materials that require low amounts of water as opposed to plant materials which require tropical amounts of water. (3183-2/93, 3854-2/10)

(www) "Water Efficient Landscape Ordinance" means Ordinance No. 3854 adopted by the City Council on January 19, 2010, and codified in the Municipal Code in Chapter 14.52. (3183-2/93, 3854-2/10)

(xxx) "Water Efficient Landscape Worksheets" means the worksheets required to be completed and which are included in Appendix B hereof. (3854-2/10)

(yyy) "water feature" means a design element where open water performs an aesthetic or recreational function. Water features include ponds, lakes, waterfalls, fountains, artificial streams, spas and swimming pools (where water is artificially supplied). The surface area of water features is included in the high water use hydrozone of the landscape area. Constructed wetlands used for on-site wastewater treatment, habitat protection or stormwater best management practices that are not irrigated and used solely for water treatment or stormwater retention are not water features and, therefore, are not subject to the water budget calculation. (3854-2/10)

(zzz) "Watering window" means the time of day irrigation is allowed. (3854-2/10)

(aaaa) "WUCOLS" means the Water Use Classification of Landscape published by the University of California Cooperative Extension, the Department of Water Resources and the Bureau of Reclamation, 2000. www.owue.water.ca.gov/docs/wucols00.pdf (3854-2/10)

(bbbb) "Xeriscape," a registered trademark of the National Xeriscape Council, Inc., means plantings which require little or no additional water than is provided by normal rainfall. (3183-2/93, 3854-2/10)

14.52.030 Director – Duties and Authority. The Director of Public Works shall have authority to perform the following duties: (3183-2/93, 3854-2/10)

(a) to enforce the provisions of this chapter and the Arboricultural and Landscape Specifications and Standards of Practice ("the Standards"); (3854-2/10)

(b) to supervise or inspect all work done under any permit or approval issued in accordance with the provisions of this chapter; (3854-2/10)

(c) to promulgate rules and regulations, and to amend or add to them, for the implementation of the provisions of this chapter and the standards as technology, situations, products and procedures change. (3854-2/10)

14.52.040 Applicability. After January 1, 2010 the provisions of this Chapter shall apply to all new and/or rehabilitated landscaped areas as follows: (3183-2/93, 3854-2/10)

(a) Landscape areas for public agency projects and private development projects with a landscape and/or water feature area of 2,500 square feet and greater. These provisions are in addition to building permit requirements and/or entitlement conditions of approval for specific projects and other ministerial permit required projects such as plumbing, electrical, etc., unless exempt by approval of the governing body or specified elsewhere in the ordinance code. (3854-2/10)

(b) All single family residential projects with less than 2500 square feet of landscaped area that are required to provide a landscape plan as a part of an entitlement, a condition of approval or are in an area described in the Zoning and Subdivision Ordinance as requiring a landscape plan shall follow the following criteria: (3854-2/10)

(1) The irrigation system design shall follow the requirements described in Section 14.52.060(c), Irrigation Design Plan, with respect to Irrigation efficiency, controllers, sprinkler heads, rain sensors, valves and backflow prevention. (3854-2/10)

(2) It is unacceptable to allow water to flow or be thrown or sprayed onto hardscapes such as the sidewalk, gutter, street, etc. (3854-2/10)

(3) The planting plans shall be based upon the proper plant selection and grouping of the plant materials being consistent with specific hydrozones. (3854-2/10)

14.52.050 Exceptions. Except as noted otherwise by special circumstances or by public hearing, the provisions of this chapter shall not apply to: (3183-2/93, 3854-2/10)

(a) Any project with a landscaped area less than 2500 square feet installed prior to January 1, 2010, and those projects whose landscape improvements are not required to submit landscape plans; or (3183-2/93, 3854-2/10)

(b) Interior remodels, tenant improvements, demolitions and changes of use; (3183-2/93, 3854-2/10)

(c) Registered historical sites; (3183-2/93)

(d) Ecological restoration projects that do not require a permanent irrigation system; (3183-2/93)

(e) Mined-land reclamation projects that do not require a permanent irrigation system; (3854-2/10)

(f) Replacement or repair or existing plant material or irrigation systems in conjunction with routine maintenance. (3183-2/93, 3854-2/10)

14.52.060 Plan Submittal Requirements and Implementation Procedures.

(a) "Conceptual Landscape Plan." All projects that are designated by the Planning Department as applicable to the provisions of this ordinance will require a submittal of a conceptual landscape plan. This plan will be reviewed by the Planning and Public Works Departments to ascertain if the design complies with this chapter of the ordinance. The conceptual landscape plan shall be prepared by a California licensed Landscape Architect and shall indicate the design intent. It shall show and quantify the areas to be hydrozoned, indicate the proposed plant palate as it relates to each separate hydrozone

area, provide an area estimate in square feet for each hydrozone and the percentage of each as it relates to the total landscaped area. (3183-2/93, 3854-2/10)

Other information relating to the compliance of the project to this chapter shall be submitted with the conceptual landscape plan, including but not limited to a water conservation statement and the type of irrigation system proposed for each hydrozone. (3183-2/93)

(b) "Working Drawings" or "Landscape Documentation Package" shall include, but not be limited to, a landscape design plan which incorporates the following elements: (3183-2/93)

(1) The landscaped design plan shall be drawn on 24" x 36" sized project base sheets unless otherwise approved, at an approved scale that accurately and clearly identifies the proposed work to be done, including a north arrow, indication of scale, and any off-site design influencing features; (3183-2/93, 3854-2/10)

A. The Landscape Design Plan shall also include the following project information on the cover page: (3854-2/10)

i. Date (3854-2/10)

ii. Project name (3854-2/10)

iii. Project address, parcel and/or lot number(s) (3854-2/10)

iv. Total landscape area (square feet) and rehabilitated landscape area (if applicable) and any Special Landscape Areas. (3854-2/10)

v. Project type (e.g., new, rehabilitated, public, private, cemetery, homeowner-installed). (3854-2/10)

vi. Checklist or index of all documents in the Landscape Document Package. (3854-2/10)

vii. Project contacts to include contact information for the project applicant and property owner. (3854-2/10)

(2) Designation of all separate hydrozones and a Hydrozone Information Table; (3183-2/93, 3854-2/10)

(3) Indicate graphically with symbols the location of all species of plant materials proposed; (3183-2/93, 3854-2/10)

(4) Type, location and quantity of all species of plant materials utilized such as trees, shrubs, groundcover, turf and other vegetation. Planting symbols shall be clearly drawn and plants labeled by botanical name, common name, container size, spacing and quantities of each group of plants indicated. If abbreviations or symbols are utilized for call outs, a legend shall be provided on each page of the planting plans; (3183-2/93, 3854-2/10)

(5) A calculation of the total turf area and its percentage of the total landscaped area; (3183-2/93, 3854-2/10)

(6) The location and percentage of the total landscaped area and types of mulch utilized; (3183-2/93, 3854-2/10)

(7) A plant materials legend that contains both scientific and common names, quantity, size, descriptive remarks and the percentage of low water use plants shall be provided on each planting plan sheet; (3183-2/93, 3854-2/10)

(8) Planting notes, tree staking, plant installation and soil preparation details, specifications and the provision for agricultural soil tests to determine soil amendments for both surface areas and plant backfill; (3183-2/93, 3854-2/10)

(9) A calculation of the total landscaped area; (3183-2/93, 3854-2/10)

(10) Natural features, including but not limited to, rock outcroppings, existing trees, shrubs that will remain; (3183-2/93, 3854-2/10)

(11) Other features that could impact the final design such as electrical transformers, power lines underground or above ground, telephone wires, etc. (3854-2/10)

(12) Those items listed in the Arboricultural and Landscape Standards and Specifications and Guidelines for Implementation of the Water Efficient Landscape Ordinance; (3183-2/93, 3854-2/10)

(13) Designation of recreational area; (3183-2/93, 3854-2/10)

(14) Property lines and street names; (3183-2/93, 3854-2/10)

(15) Streets, driveways, walkways, and other paved areas; (3183-2/93, 3854-2/10)

(16) Pools, ponds, water features, fences, and retaining walls; (3183-2/93, 3854-2/10)

(17) Existing and proposed buildings and structures including finish floor elevations and pad elevations if applicable. (3183-2/93, 3854-2/10)

(18) Refer to Section 14.52.070(g) for detailed requirements. (3854-2/10)

(c) The "Irrigation Design Plan" shall be drawn on 24” x 36” sized project base sheets, unless otherwise approved. It shall conform to Arboricultural and Landscape Standards and Specifications. It shall be separate from, but use the same format as, the landscape design plan. The scale shall be the same as that used for the landscape design plan, and the irrigation design plan shall accurately and clearly identify all of the following items: (3183-2/93, 3854-2/10)

(1) Location and size of separate water meters for the landscape with a designation of the type (e.g. potable, recycled, well); (3183-2/93, 3854-2/10)

(2) Irrigation systems shall be designed to be consistent with hydrozones; (3183-2/93)

(3) Irrigation plans indicating the layout of each system with the location, type and size of all components of the irrigation system including automatic controllers, main and lateral lines, points of connection, data on valve sizes, gallons per minute (G.P.M.), valve locations, the size and location of sleeves, all moisture sensing devices, flow controls, rain sensing devices, quick couplers, backflow

prevention equipment, filters, pressure regulators, spray heads, drip heads, bubblers, etc., for both conventional and drip or microspray systems; (3183-2/93)

(4) Static water pressure at the point of connection to the public water supply. (3183-2/93)

(5) Flow rate (gallons per minute), application rate (inches per hour), and design operating pressure (PSI) for each station; (3183-2/93)

(6) Reclaimed water irrigation system as specified in this chapter; (3183-2/93)

(7) An irrigation legend on each plan sheet indicating all utilized equipment including adaptors, nozzle sizes, G.P.M., P.S.I., radius and other specific information; (3183-2/93)

(8) Irrigation notes, contruction details of all assemblies and components and specifications; (3183-2/93)

(9) A recommended irrigation schedule and maintenance schedule; (3183-2/93)

(10) Grading design plan. (3183-2/93)

(11) Landscape Architect's professional stamp in the City's format, Landscape Architect's wet signature, contact information (email and phone), the date and the certifying statement: The design of this project complies with the requirements of the City's Water Efficient Landscape Requirements Ordinance – (MC 14.52), and shall bear the wet signature of the Landscape Architect as required by law. (3854-2/10)

(12) Maximum Applied Water Allowance (MAWA) and the Estimated Applied Water Use (EAWU), both expressed as annual totals. (3854-2/10)

A. Water Efficient Landscape Worksheet (3854-2/10)

B. Water budget calculations (3854-2/10)

(13) A copy of the calculations clearly identifying all elements of the formula shall be submitted concurrently for maximum applied water allowance (MAWA), and estimated applied water use (EAWU). (3854-2/10)

(14) Refer to Section 14.52.070(h) for detailed requirements. (3854-2/10)

(d) Grading design plan, unless a precise grading plan is provided by a Registered Civil Engineer for the project, or unless the project is limited to replacement planting and/or irrigation to rehabilitate an existing Landscaped Area. (3854-2/10)

(e) Soil Management Report and/or Specifications, or a provision requiring soil testing and amendment recommendations and implementation to be accomplished after grading has been completed (in this instance, approvals of the Landscape Document Package will not be done until soil testing and recommendations have been completed and are incorporated into the Landscape Document Package). (3854-2/10)

14.52.070 Water Efficient Landscape Calculations, Alternatives and Design Guidelines.

(a) The project applicant shall provide the calculated Maximum Applied Water Allowance (MAWA) and Estimated Applied Water Use (EAWU) for the Landscape Project Area as part of the Final Landscape Documentation package submittal to the City. The MAWA and EAWU shall be calculated based on completing the Water Efficient Landscape Worksheets (in accordance with the sample worksheets in Appendix B.) All worksheets, calculations and other related items shall be incorporated onto the design plans within the Landscape Document Package. (3183-2/93, 3854-2/10)

(b) The EAWU projected for the landscaped area shall not exceed the MAWA. The MAWA shall be calculated using an Evapotranspiration Adjustment Factor (ETAF) of 0.7, except for the portion of the MAWA applicable to any Special Landscape Areas within the project, which shall be calculated using an ETAF of 1.0. Where the design of the landscaped area can otherwise be shown to be equivalently water-efficient, the applicant may submit alternative or abbreviated information supporting the demonstration that the annual Estimated Applied Water Use is less than the Maximum Applied Water Allowance, for the review and approval by the City. (3854-2/10)

(c) Water budget calculations shall adhere to the following requirements: (3854-2/10)

(1) The Maximum Applied Water Allowance shall be calculated using the worksheet and equation presented in Appendix B on page 1. The example calculation on page 2 is a hypothetical example to demonstrate proper use of the equation. All numbers used shall be shown in the equations. (3854-2/10)

(2) The Estimated Applied Water Use shall be calculated using the water efficient landscape worksheet and equation presented in Appendix B. (3854-2/10)

(3) For the calculation of the Maximum Applied Water Allowance (MAWA) and Estimated Applied Water Use (EAWU), a project applicant shall use the ETo value of 43 inches per year in Huntington Beach. (3854-2/10)

(4) For calculation of the EAWU, the plant water use factor shall be determined as appropriate to the project location from the Water Use Efficiency of Landscape Species (WUCOLS) Species Evaluation List. The plant factor is 0.1 for very low water use plants, 0.2 to 0.3 for low water use plants, 0.4 to 0.6 for moderate water use plants, and 0.7 to 1.0 for high water use plants. (3854-2/10)

(5) For calculation of the EAWU, the plant water use factor shall be determined for each valve hydrozone based on the highest-water-use plant species within the zone. The plant factor for each hydrozone may be required to be further refined as a “landscape coefficient” according to protocols defined in detail in the WUCOLS document, to reflect planting density and microclimate effects on water need, if required by the City Landscape Architect. (3854-2/10)

(6) For calculation of the EAWU, the area of a water feature shall be defined as a high water use hydrozone with a plant factor of 1.0. (3854-2/10)

(7) For calculation of the EAWU, a temporarily irrigated hydrozone area, such as an area of highly drought-tolerant native plants that are not intended to be irrigated after they are fully established, shall be defined as a very low water use hydrozone with a plant factor of 0.1. (3854-2/10)

(8) For calculation of the MAWA, the ET Adjustment Factor (ETAF) for Special Landscape Areas shall be set at 1.0. For calculation of the EAWU, the ETAF for Special Landscape Areas shall be calculated as the SLA Plant Factor divided by the SLA Irrigation Efficiency Factor. (3854-2/10)

(9) Irrigation Efficiency shall be calculated using the worksheet and equation presented in Appendix B. (3854-2/10)

(d) The Maximum Applied Water Allowance. (3183-2/93, 3854-2/10)

(1) A project's Maximum Applied Water Allowance shall be calculated using the following formula: (3183-2/93, 3854-2/10)

MAWA =	(ETo) (0.7) (LA) (0.62) where:
MAWA =	Maximum Applied Water Allowance (gallons per year)
ETo =	Reference Evapotranspiration (inches per year) (43 inches per year in Huntington Beach)
0.7 =	ET adjustment factor
LA =	Landscaped Area (square feet)
0.62 =	Conversion factor (to gallons per square foot)

(3183-2/93, 3854-2/10)

(2) An example for calculations of the Maximum Applied Water Allowance is: (3183-2/93, 3854-2/10)

Project Site:	Landscaped area of 50,000 sq. ft. in Huntington Beach.
MAWA =	(ETo) (0.7) (LA) (0.62) (43 inches) (0.7) (50,000 sq. ft.) (0.62)

(3183-2/93, 3854-2/10)

Maximum Applied Water Allowance (for this example) = 1,333,000 gallons per year (or 1,758 hundred-cubic-feet per year: 1,333,000 divided by 748 = 1758.6). (3183-2/93, 3854-2/10)

(3) It is conceivable that landscaped areas in public and private projects, including but not limited to, parks, playgrounds, sports fields, golf courses, cemeteries, or school yards where turf provides a playing surface or serves other recreational or approved passive purposes may require water in addition to the Maximum Applied Water Allowance. (Those Special Landscape Areas shall have had the MAWA calculated utilizing an ET Adjustment Factor of 1.0). If this is the case, a statement shall be included with the landscape design plan, designating areas to be used for such purposes and specifying any needed amount of additional water

above the Maximum Applied Water Allowance. The applicant shall have tried to balance the additional water anticipated for the active turf areas with other areas that require substantially less water, such as those with a plant factor in the 0 to 0.3 range. (3183-2/93, 3854-2/10)

(e) Estimated Applied Water Use (EAWU). (3183-2/93, 3854-2/10)

(1) The Estimated Applied Water Use shall not exceed the Maximum Applied Water Allowance. (3183-2/93, 3854-2/10)

(2) A calculation of the Estimated Applied Water Use shall be submitted with the Landscape Documentation Package. It may be calculated by summing the amount of water recommended in the irrigation schedule. (3183-2/93, 3854-2/10)

(f) Soil Management Report. (3183-2/93, 3854-2/10)

(1) In order to reduce runoff and encourage healthy plant growth, a soil management report shall be completed by the project applicant, or his/her designee, as follows: (3183-2/93, 3854-2/10)

A. Submit soil samples to a certified agronomic soils laboratory such as Wallace Laboratories or Soil and Plant Laboratories for analysis and recommendations. (3183-2/93, 3854-2/10)

i. Soil sampling shall be conducted in accordance with laboratory protocol, including protocols regarding adequate sampling depth for the intended plants. (3183-2/93, 3854-2/10)

ii. The soil analysis shall at a minimum include soil texture; infiltration rate determined by an on-site percolation test, a laboratory test or soil texture infiltration rate table, pH, total soluble salts, sodium; (3183-2/93, 3854-2/10)

B. Determination of soil texture, indicating the percentage of organic matter. (3183-2/93, 3854-2/10)

C. A soil fertility and an agricultural suitability analysis shall be provided which includes but is not limited to a description analysis for half saturation percentage, ph, salinity, nitrate, nitrogen, ammonium nitrogen, phosphate phosphorus, potassium, calcium, magnesium, salinity boron and sodium absorption ratio. A descriptive narrative shall indicate procedures and provide soil recommendations for both general soil preparation; and backfill mixes, and continuing maintenance fertilizer applications, and recommendations. (3183-2/93, 3854-2/10)

D. The project applicant, or his/her designee, shall comply with one of the following: (3183-2/93, 3854-2/10)

i. If significant mass grading is not planned, the soil analysis report shall be submitted to the City as part of the Landscape Documentation Package; or (3183-2/93, 3854-2/10)

ii. If significant mass grading is planned, the soil analysis report shall be submitted to the City prior to initiating any construction. In this instance the requirement of approving precise grading plans and the Landscape Document Package simultaneously will be waived to allow soil test results to be available to the Landscape Architect prior to his Landscape Document Package being completed. The Landscape Document Package will then be required prior to the first building inspection for foundations. (3183-2/93, 3854-2/10)

iii. The soil analysis report shall be made available, in a timely manner, to the professionals preparing the landscape design plans, irrigation design plans and, if necessary, the precise grading plans to make any necessary adjustments to the design plans. (3183-2/93, 3854-2/10)

iv. The project applicant, or his/her designee, shall submit documentation verifying implementation of soil analysis report recommendations to the City Landscape Architect prior to obtaining a final Certificate of Occupancy. (3183-2/93, 3854-2/10)

(2) A mulch of at least three (3) inches shall be applied to all planting areas except turf and living ground coverings. Refer to Section 14.52.060(b) for basic plan requirements. (3183-2/93, 3854-2/10)

(g) Landscape Design Plan. For the efficient use of water, a landscape shall be carefully designed and planned for the intended function of the project. A landscape design plan meeting the following requirements shall be submitted as part of the landscape documentation package. (3183-2/93, 3854-2/10)

(1) Plant Selection and Grouping. Any plants may be used in the landscape, providing the Estimated Applied Water Use (EAWU) recommended does not exceed the Maximum Applied Water Allowance (MAWA) and that the plants meet the specifications set forth in the following paragraphs and the Arboricultural and Landscape Standards and Specifications; (3183-2/93, 3854-2/10)

A. protection and preservation of non-invasive water-conserving plant species and water-conserving turf; (3183-2/93, 3854-2/10)

B. selection of water-conserving plant species and water-conserving turf; (3183-2/93, 3854-2/10)

C. selection of plants based on disease and pest resistance; (3183-2/93, 3854-2/10)

D. selection of trees based on available planting area and Special Sub-Surface Construction provisions to allow maturity to occur without damaging infrastructure. (3183-2/93, 3854-2/10)

E. selection of plants from local and regional landscape program plant lists. (3183-2/93, 3854-2/10)

(2) Plants having similar water use shall be grouped together in distinct hydrozones; (3183-2/93, 3854-2/10)

(3) Plants shall be selected appropriately based upon their adaptability to the climatic, geologic, and topographic conditions of the site. Protection and preservation of native species and natural areas is encouraged. The planting of trees is encouraged wherever it is consistent with the other provisions of this ordinance. To encourage the efficient use of water, the following is highly recommended: (3183-2/93, 3854-2/10)

A. use the Sunset Western Climate Zone System which takes into account temperature, humidity, elevation, terrain, latitude, and varying degrees of continental and marine influence on local climate; (3854-2/10)

B. recognize the horticultural attributes of plants (i.e., mature plant size, invasive surface roots) to minimize damage to property or infrastructure (e.g., buildings, sidewalks, and power lines); and (3854-2/10)

C. consider the solar orientation for plant placement to maximize summer shade and winter solar gain. (3854-2/10)

(4) Fire prevention needs shall be addressed in areas that are fire prone. Information about fire prone areas and appropriate landscaping for fire safety is available from the Fire Department. . When conflicts between water conservation and fire safety design elements exist, the fire safety requirements shall have priority. (3183-2/93, 3854-2/10)

(5) Lawn or turf areas: Lawn areas shall be minimized. The amount of lawn area shall not exceed 25% of the total landscaped area on any project with the exception of high use facilities such as parks or play fields (Special Landscaped Areas). Lawn areas less than ten feet in any dimension are discouraged. Narrow strips of lawn areas are specifically discouraged. Lawn areas shall not exceed a four (horizontal length) to one (vertical height), or a 25% slope ratio on sloping sites or bermed areas. (3183-2/93, 3854-2/10)

(6) The use of artificial turf may be considered in certain instances where lawn is desired per the above, where lawn is specifically discouraged or where the lawn area exceeds the maximum allowed percentage of landscaped area. (Special installation requirements are required for public rights of way). (3183-2/93, 3854-2/10)

(7) The use of invasive plant species and/or noxious plant species is not acceptable. (3854-2/10)

(8) The architectural guidelines of a common interest development, which include community apartment projects, condominiums, planned developments, and stock cooperatives, shall not prohibit or include conditions that have the effect of prohibiting the use of water efficient plant species as a group. (3854-2/10)

A. Water Features (3183-2/93, 3854-2/10)

i. Recirculating water systems shall be used for water features. (3183-2/93, 3854-2/10)

ii. Where available and consistent with public health guidelines, recycled water shall be used as a source for decorative water features. (3183-2/93, 3854-2/10)

iii. The surface area of a water feature shall be included in the high water use hydrozone area of the water budget calculation. (3854-2/10)

iv. Water evaporation from pools and spas is significant and covers are highly desirable and recommended. (3183-2/93, 3854-2/10)

B. Mulch and Amendments (3183-2/93, 3854-2/10)

i. minimum three inch (3″) layer of mulch shall be applied on all exposed soil surfaces of planting areas except in turf areas, creeping or rooting groundcovers, or direct seeding applications where mulch is contraindicated. (3183-2/93, 3854-2/10)

ii. Stabilizing/mulching products such as Excelsior matting or the approved equivalent shall be used on slopes. (3854-2/10)

iii. The mulching portion of the seed/mulch slurry in hydro-seeded applications shall meet the mulching requirement. (3183-2/93, 3854-2/10)

iv. Soil amendments shall be incorporated according to recommendations of the soil report and what is appropriate for the plants selected. (3183-2/93, 3854-2/10)

(9) The landscape design plan, at a minimum, shall: (3854-2/10)

A. delineate and label each hydrozone by number, letter, or other method; (3854-2/10)

B. identify each hydrozone as low, moderate, high water, or mixed water use. Temporarily irrigated areas of the landscaped area shall be included in the low water use hydrozone for the water budget calculation; (3854-2/10)

C. identify recreational areas; (3854-2/10)

D. identify areas permanently and solely dedicated to edible plants; (3854-2/10)

E. identify areas irrigated with recycled water; (3854-2/10)

F. identify areas irrigated with grey water; (3854-2/10)

G. identify type of mulch and application depth; (3854-2/10)

H. identify soil amendments, type, and quantity; (3854-2/10)

I. identify type and surface area of water features; (3854-2/10)

J. identify hardscapes (pervious and non-pervious); (3854-2/10)

K. identify location and installation details of any applicable storm water best management practices that encourage on-site retention and infiltration of storm water. Storm water best management practices are encouraged in the landscape design plan and shall be designed to eliminate vector habitat concerns. Examples include, but are not limited to: (3854-2/10)

i. infiltration beds, swales, and basins that allow water to collect and soak into the ground; (3854-2/10)

ii. constructed wetlands and retention ponds that retain water, handle excess flow, and filter pollutants; and (3854-2/10)

iii. pervious or porous surfaces (e.g., permeable pavers or blocks, pervious or porous concrete, etc.) that minimize runoff. (3854-2/10)

L. identify any applicable rain harvesting or catchment technologies (e.g., rain gardens, cisterns, etc.); (3854-2/10)

M. contain the following statement: "I have complied with the criteria of the Water Efficient Landscape Ordinance and have applied them for the efficient use of water in the landscape design plan;" and (3854-2/10)

N. bear the wet signature of a California-licensed Landscape Architect. (3854-2/10)

(h) Irrigation Design Plan. For the efficient use of water, an irrigation system shall meet all the requirements listed in this section and the manufacturer's recommendations. The irrigation system and its related components shall be planned and designed to allow for proper installation, management, and maintenance. An irrigation design plan meeting the following conditions shall be submitted as part of the Landscape Documentation Package. Refer to Section 14.52.060(c) for basic plan requirements. (3183-2/93, 3854-2/10)

(1) Irrigation Design Criteria. (3183-2/93, 3854-2/10)

A. Runoff and Overspray. Soil types and infiltration rate shall be considered when designing irrigation systems. All irrigation systems shall be designed to eliminate runoff, low head drainage, overspray, or other similar conditions where water flows onto adjacent property, non-irrigated areas, walks, roadways, or structures. Proper irrigation equipment and schedules, including features such as repeat cycles, shall be used to closely match

application rates to the soil infiltration rates therefore eliminating runoff. (3183-2/93, 3854-2/10)

i. Special attention shall be given to avoid runoff on slopes and to eliminate overspray in plant areas with a width less than ten (10) feet and in median strips. (3183-2/93, 3854-2/10)

ii. Narrow or irregularly shaped areas, including turf, less than eight (8) feet in width in any direction shall be irrigated with subsurface irrigation or a low volume irrigation system, providing 100% coverage of the planting area with no overspray. (3854-2/10)

B. Irrigation Efficiency. Average irrigation efficiency for the project shall be determined in accordance with the EAWU calculation sheet in Appendix B. Unless otherwise indicated by the irrigation equipment manufacturer's specifications or demonstrated by the project applicant, the irrigation efficiency of the irrigation heads used within each hydrozone shall be assumed to be:
(3183-2/93, 3854-2/10)

Pop-up stream rotator heads = 75%
Stream rotor heads = 75%
Microspray = 75%
Bubbler = 80%
Drip emitter = 85%
Subsurface irrigation = 90%
(3854-2/10)

C. The irrigation system shall be designed to ensure that the dynamic pressure at each emission device is within the manufacturer's recommended pressure range for optimal performance. (3854-2/10)

i. If the static pressure is above or below the required dynamic pressure of the irrigation system, pressure-regulating devices such as inline pressure regulators, booster pumps, or other devices shall be installed to meet the required dynamic pressure of the irrigation system.
(3854-2/10)

ii. Static water pressure, dynamic or operating pressure, and flow reading of the water supply shall be measured at the point of connection. These pressure and flow measurements shall be conducted at the design stage. If the measurements are not available at the design stage, the measurements shall be conducted at installation.
(3854-2/10)

D. Water Meters. Separate landscape water meters shall be installed for all projects except for single family homes. However, single family homes with sub-potable or reclaimed water systems require a separate meter and additional preventative safety measures.
(3183-2/93, 3854-2/10)

E. Controllers. Automatic control systems shall be required for all irrigation systems and must be able to accommodate all aspects of the design utilizing either evapotranspiration or soil moisture sensor data, including dual programs and/or multiple repeat features and/or "smart" type controller technology. (3183-2/93, 3854-2/10)

i. Valves. Plants which require different amounts of water shall be irrigated by separate valves as a part of the Hydrozone requirement. If one valve is used for a given area, only plants with similar water use shall be used in that area. Anti-drain (check) valves shall be installed in strategic points to prevent low-head drainage and are required on all irrigation systems. (Manual shut-off valves (such as a gate valve, ball valve, or butterfly valve) shall be required as close as possible to the point of connection of the water supply downstream from the backflow prevention device, to minimize water loss in case of an emergency (such as a main line break) or routine repair. (3183-2/93, 3854-2/10)

ii. Backflow prevention devices shall be required to protect the potable water supply from contamination by the irrigation system. A project applicant shall refer to the applicable City code (i.e., the Building Dept., and/or public health) for additional backflow prevention requirements, and shall utilize City Standards for installation. (3854-2/10)

F. Sprinkler Heads. Heads and emitters shall have consistent application rates and matched precipitation rates within each control valve circuit. Sprinkler heads shall be selected for proper area coverage, application rate, operating pressure, adjustment capability, and ease of maintenance. Head to head coverage is recommended. However, sprinkler spacing shall be designed to achieve the highest possible distribution uniformity using the manufacturer's recommendations and the types of plant materials used. (3183-2/93, 3854-2/10)

i. Swing joints or other riser-protection components are required on all risers subject to damage that are adjacent to high traffic areas. (3854-2/10)

G. Rain Sensing Override Devices. Rain sensing override devices shall be required on all irrigation systems. (3183-2/93, 3854-2/10)

H. Soil Moisture Sensing Devices. Soil moisture sensing devices are required to be used in lawn areas for projects with a total of 5,000 square feet and greater of total landscaped area. A minimum of one (1) moisture sensing device shall be utilized per turf area. Soil moisture sensing devices shall be considered where appropriate for shrub areas. (3183-2/93, 3854-2/10)

I. Flow Control Sensing Devices. Projects with 10,000 square feet or more of landscaped area are required to have one (1) flow control

valve per point of connection. All other sized systems are recommended to utilize flow control sensing devices. (3183-2/93, 3854-2/10)

J. Relevant information from the soil management plan, such as soil type and infiltration rate, shall be utilized when designing irrigation systems so as to match the irrigation systems application rate to the infiltration rate of the soil. (3854-2/10)

K. The design of the irrigation system shall conform to the hydrozones of the landscape design plan. (3183-2/93, 3854-2/10)

i. It is highly recommended that the project applicant or Landscape Architect inquire with the water operations yard about peak water operating demands (on the water supply system) or water restrictions that may impact the effectiveness of the irrigation system. (3183-2/93, 3854-2/10)

ii. In mulched planting areas, the use of low volume irrigation is required to maximize water infiltration into the root zone. Refer to item (J) above. (3183-2/93, 3854-2/10)

L. Hydrozone. (3183-2/93, 3854-2/10)

i. Each valve shall irrigate a hydrozone with similar site, slope, sun exposure, soil conditions, and plant materials with similar water use. (3183-2/93, 3854-2/10)

ii. Sprinkler heads and other emission devices shall be selected based on what is appropriate for the plant type within that hydrozone. (3183-2/93, 3854-2/10)

iii. Where feasible, trees shall be placed on separate valves from shrubs, groundcovers, and turf. (3183-2/93, 3854-2/10)

iv. Individual hydrozones that mix plants of moderate and low water use or moderate and high water use may be allowed if: (3183-2/93, 3854-2/10)

(a) the plant factor calculation is based on the proportions of the respective plant water uses and their respective plant factors; or (3183-2/93, 3854-2/10)

(b) the plant factor of the higher water using plant is used for the calculations. (3183-2/93, 3854-2/10)

v. Individual hydrozones that mix high and low water use plants shall not be permitted. (3183-2/93, 3854-2/10)

vi. On the landscape design plan and irrigation design plan, hydrozone areas shall be designated by number, letter, or other designation. On the irrigation design plan, designate the areas irrigated by each valve and assign a number to each valve. (3183-2/93, 3854-2/10)

M. Overhead Irrigation. Overhead irrigation may not be acceptable for the areas within 24 inches of any non permeable surface. There shall be NO overspray onto any hardscape or other non-permeable surfaces, nor shall there be any runoff allowed onto hardscape or other non-permeable surfaces. Allowable irrigation within the 24 inch setback from non-permeable surfaces may include drip, drip-line, surface-flow, or other low flow non spray technology. (3183-2/93, 3854-2/10)

These restrictions may be modified IF:

i. the landscape area is adjacent to permeable surfacing and no runoff occurs; or (3183-2/93, 3854-2/10)

ii. the adjacent non-permeable surfaces are designed and constructed to drain entirely to landscaping; or (3183-2/93, 3854-2/10)

iii. the irrigation designer specifies an alternative design or technology, as part of the Landscape Document Package and clearly demonstrates strict adherence to irrigation system design criteria in section 14.52.070(h). Prevention of overspray and runoff must be confirmed during an irrigation system survey and physical test or possibly with an official irrigation audit if required by the City Landscape Architect or inspector. (3183-2/93, 3854-2/10)

N. Slopes. Slopes greater than 25% shall not be irrigated with an irrigation system with a precipitation rate exceeding 0.75 inches per hour. This restriction may be modified if the landscape designer of the landscape project specifies an alternative design or technology, as part of the Landscape Documentation Package, and clearly demonstrates no runoff or erosion will occur. Prevention of runoff and erosion must be confirmed during the irrigation system survey and physical test or possibly with an official irrigation audit if required by the City Landscape Architect or inspector. (3183-2/93, 3854-2/10)

O. The irrigation design plan, at a minimum, shall contain: (3183-2/93, 3854-2/10)

i. the location and size of separate water meters for landscape; (3183-2/93, 3854-2/10)

ii. the location, type, and size of all components of the irrigation system, including controllers, main and lateral lines, valves, sprinkler heads, moisture sensing devices, rain switches, quick couplers, pressure regulators, and backflow prevention devices; (3183-2/93, 3854-2/10)

iii. static water pressure at the point of connection to the public water supply; (3183-2/93, 3854-2/10)

iv. flow rate (gallons per minute), application rate (inches per hour), and design operating pressure (pressure per square inch) for each station; (3183-2/93, 3854-2/10)

v. irrigation schedule parameters necessary to program smart timers specified in the landscape design; (3183-2/93, 3854-2/10)

vi. the following statement: "I have complied with the criteria of the Water Efficient Landscape Ordinance and applied them accordingly for the efficient use of water in the irrigation design plan;" and (3183-2/93, 3854-2/10)

vii. the wet signature of a California-licensed landscape professional. (3183-2/93, 3854-2/10)

(i) Irrigation Schedule Plan. The Irrigation Schedule Plan, at a minimum, shall contain: (3183-2/93, 3854-2/10)

(1) An annual irrigation program with monthly irrigation schedules shall be required for the plan establishment period, for the established landscape, and for any temporarily irrigated areas. (3183-2/93, 3854-2/10)

(2) The irrigation schedule shall: (3183-2/93, 3854-2/10)

A. include run time (in minutes per cycle), suggested number of cycles per day, and frequency of irrigation for each station, and; (3183-2/93, 3854-2/10)

B. indicate the amount of applied water (in hundred cubic feet, or gallons) recommended on a monthly and annual basis. (3183-2/93, 3854-2/10)

(3) The total amount of water for the project shall include water designated in the estimated total water use calculation plus water needed for any water features, which shall be considered as a high water using hydrozone. (3183-2/93, 3854-2/10)

(4) Recreational areas designated in the landscape design plan shall be highlighted and the irrigation schedule shall indicate if any additional water is needed above the MAWA (maximum applied water allowance), because of high plant factors (but not due to irrigation inefficiency). (3183-2/93, 3854-2/10)

(5) Irrigation scheduling shall incorporate the use of evapotranspiration data as available, such as those from the California Irrigation Management Information System (CIMIS) weather stations to apply the appropriate levels of water for different climates. (3183-2/93, 3854-2/10)

(6) Landscape irrigation shall be primarily scheduled between 2:00 a.m. and 10:00 a.m. to avoid irrigating during times of high wind or high temperature. (3183-2/93, 3854-2/10)

(j) Grading Design Plan. Grading design plans satisfying the following conditions shall be submitted as part of the Landscape Documentation Package. (3183-2/93, 3854-2/10)

(1) A grading design plan shall be drawn on 24" x 36" sized project base sheets, unless otherwise approved. It may be separate from but use the same format and scale as the landscape design plan. (3183-2/93, 3854-2/10)

(2) The grading design plan shall indicate finished configurations and elevations of the landscaped area, including the height of graded slopes, drainage patterns, pad elevations, and finish grade, and storm water retention improvements, if applicable. (3183-2/93, 3854-2/10)

(3) To prevent excessive soil erosion and runoff, it is highly recommended that the project design professional do the following: (3183-2/93, 3854-2/10)

A. grade so that all irrigation and normal rainfall remains within property lines and does not drain on to non-permeable hardscapes; (3183-2/93, 3854-2/10)

B. avoid disruption of natural drainage patterns and undisturbed soil; and (3183-2/93, 3854-2/10)

C. avoid soil compaction in landscaped areas. (3183-2/93, 3854-2/10)

(k) Post-Installation Landscape and Irrigation Maintenance. (3183-2/93, 3854-2/10)

(1) Landscapes shall be maintained to ensure water use efficiency in accordance with existing Municipal Codes, the Zoning and Subdivision Ordinance, the Arboricultural and Landscape Standards and Specifications and this Water Efficient Landscape Requirements Ordinance. (3183-2/93, 3854-2/10)

A. For the efficient use of water, all irrigation schedules shall be developed, managed, and evaluated to utilize the minimum amount of water required to maintain plant health. Irrigation schedules shall meet the following criteria: (3183-2/93, 3854-2/10)

i. Irrigation scheduling shall be regulated by automatic irrigation controllers. (3183-2/93, 3854-2/10)

ii. Overhead irrigation shall be scheduled in accordance with the City's Water Conservation Ordinance. Operation of the irrigation system outside the normal watering window is allowed for plant establishment period of 90 to 365 days maximum, water auditing and system maintenance. (3183-2/93, 3854-2/10)

(l) Maintenance Schedules. A regular maintenance schedule satisfying the following conditions shall be submitted as part of the Landscape Documentation Package: (3183-2/93, 3854-2/10)

(1) Landscapes shall be maintained to ensure water efficiency. A regular maintenance schedule shall include but not be limited to checking, adjusting, and repairing irrigation equipment; resetting the automatic controller; aerating and dethatching turf areas; replenishing mulch; fertilizing; pruning, and weeding in all landscaped areas. (3183-2/93, 3854-2/10)

(2) Whenever possible, repair of irrigation equipment shall be done with the originally specified materials or their equivalents. (3183-2/93, 3854-2/10)

(m) Landscape Irrigation Audit Schedules. A schedule of landscape irrigation audits, for all projects with a landscaped area of 10,000 square feet and larger, satisfying the following conditions shall be submitted to the city as part of the Landscape Documentation Package. (3183-2/93, 3854-2/10)

(1) Refer to Certification. (3183-2/93, 3854-2/10)

(2) At a minimum, audits shall be in accordance with the State of California Landscape Water Management Program as described in the Landscape Irrigation Auditor Handbook, the entire document, which is hereby incorporated by reference. (See Landscape Irrigation Auditor Handbook (June 1990) version 5.5 (formerly Master Auditor Training.) (3183-2/93, 3854-2/10)

(3) It is recommended that landscape irrigation audits be conducted by certified landscape irrigation auditors at least once every five years. (3183-2/93, 3854-2/10)

(n) Public Education. Signs shall be used to identify all model home complexes as an example of a water efficient landscape and featuring elements such as hydrozones, irrigation equipment and others which contribute to the overall water efficient theme. Information shall be provided about designing, installing, and maintaining water efficient landscapes. (3183-2/93, 3854-2/10)

14.52.080 Statutory Authority in Case of Conflicting Provisions. Nothing in this chapter shall be deemed to affect, annul or abrogate any other laws or ordinances pertaining or applicable to the properties and areas affected by this chapter. (3183-2/93, 3854-2/10)

14.52.090 Effective Precipitation. If effective precipitation is included in the calculation of the Estimated Total Water Use, the Effective Precipitation Disclosure Statement, as depicted in section 14.52.100(b) shall be completed, signed, and submitted with the Landscape Documentation Package. No more than twenty-five (25) percent of the local annual mean precipitation shall be considered effective precipitation in the calculation of the Estimated Total Water Use. (3183-2/93, 3854-2/10)

14.52.095 Provisions for Existing Landscapes.

(a) Irrigation of all landscaped areas shall be conducted in a manner conforming to the rules and requirements and shall be subject to penalties and incentives for water conservation and water waste prevention, as determined and implemented by the City. (3854-2/10)

(b) The City may administer programs such as irrigation water use analyses, irrigation surveys, tiered water rate structures, water budgeting by parcel, or other approaches to achieve landscape water use efficiency community-wide to a level equivalent to or less than would be achieved by applying a MAWA calculated with an ETAF of 0.8 to all landscaped areas in the City over one acre in size. (3854-2/10)

(c) The architectural guidelines of a common interest development, including apartments, condominiums, planned developments, and stock cooperatives, shall not prohibit or include conditions that have the effect of prohibiting the use of low-water use plants as a group. (3854-2/10)

(d) Reclaimed Water. The installation of reclaimed water irrigation systems (dual distribution systems) shall be required to allow for the current and future use of reclaimed water, unless a written exemption has been granted by the Public Works Water Division, stating that reclaimed water meeting all health standards is not available and will not be available in the foreseeable future. (3854-2/10)

(e) The reclaimed water irrigation system shall be designed and operated in accordance with all codes, and shall include but not be limited to the use of purple pipe and fittings for the total reclaimed water system. Refer to the "Rules and Regulations for the Use of Reclaimed Water" (available at the Water Department) for more information. (3854-2/10)

(f) For single family residential lots with reclaimed water, there shall be no hose bibbs, loose key or otherwise and no quick couplers installed on the reclaimed system. (3854-2/10)

14.52.098 Installation Completion, Certification and Acceptance.

(1) Landscape project installation shall not proceed until the Landscape Documentation Package has been approved by the City and any ministerial permits required are issued. (3854-2/10)

(2) The project applicant shall notify the City at the beginning of the installation work and at intervals, as necessary, for the duration of the landscape project work to schedule all required inspections. (3854-2/10)

(3) Certification shall be accomplished by completing the Certificate of Substantial Completion as depicted in Section 14.52.100(c) and delivering it to the City Public Works Department, Landscape Architect and to the Owner of Record. (3854-2/10)

i. A Landscape Installation Certificate of Completion in the form included in Section 14.52.100, which shall include: (i) certification by a Landscape Architect or licensed Landscape Contractor, or the property owner that the landscape project has been installed per the approved Landscape Documentation Package; and (ii) the following statement: “The landscaping has been installed in substantial conformance to the City approved design plans, and complies with the provisions of the Water Efficient Landscape Ordinance for the efficient use of water in the landscape.” (3854-2/10)

ii. Documentation of the irrigation scheduling parameters used to set the controller(s); (3854-2/10)

iii. An irrigation audit report from a certified irrigation auditor, documentation of enrollment in regional water purveyor's or the Municipal Water District of Orange County's water conservation programs, and/or documentation that the MAWA and EAWU information for the landscape project has been submitted to the local utilities division, may be required at the option of the City. (3854-2/10)

(4) A licensed landscape architect and, if applicable, a certified/licensed irrigation designer, shall conduct a final field observation and shall provide a certificate of substantial completion of the entire landscaped area (per city approved plans) to the city prior to acceptance. The certificate shall specifically indicate that plants were installed as specified, that the irrigation system was installed as designed, and that an irrigation audit (if project size warrants it) has been performed, along with a list of any observed deficiencies. (3854-2/10)

(5) Upon completing the installation of the landscaping and the irrigation system, on project landscape installations totaling 10,000 square feet or greater, an irrigation audit shall be conducted by a certified landscape irrigation auditor prior to the final field inspection and acceptance. (3854-2/10)

(6) Certification of Completion of the landscape planting and irrigation installations shall be obtained through a Certificate of Use and Occupancy or a Permit Final. (3854-2/10)

(rest of page unused)

14.52.100 Required Forms. (3183-2/93, 3854-2/10 / for entire section)

CERTIFICATE OF SUBSTANTIAL COMPLETION

Project Site:
Planning Entitlement No.: _____
Project Location:
Tentative Tract No.:
Total Project Landscaped Area in Square Feet: _____
Preliminary Project Documentation Submitted: (check indicating submittal)

- ❑ 1. Maximum Applied Water Allowance:
  ___ gallons or cubic feet/year
  ___ percent of the local annual mean precipitation
- ❑ 2. Estimated Applied Water Use:
  ___ gallons or cubic feet/year
- ❑ 3. Estimated Total Water Use:
  ___ gallons or cubic feet/year
- ❑ 4. Landscape Design Plan
- ❑ 5. Irrigation Design Plan
- ❑ 6. Irrigation Schedules
- ❑ 7. Maintenance Schedule
- ❑ 8. Landscape Irrigation Audit Schedule
- ❑ 9. Grading Design Plan
- ❑ 10. Soil Analysis

Post-Installation Inspection: (Check indicating substantial completion)

- ❑ A. Plants installed as specified
- ❑ B. Irrigation system installed as designed
  - ❑ dual distribution system for recycled water
  - ❑ minimal run off or overspray
- ❑ C. Landscape Irrigation Audit performed
- ❑ Project submittal package and a copy of this certification has been provided to owner/manager and local water agency.

Comments:

_____

I/we certify that based upon periodic site observations, the work has been substantially completed in accordance with the Water Efficient Landscape Ordinance and that the landscape planting and irrigation installation substantially conform with the city approved plans and specifications.

Landscape Architect Signature Date

State License No.

I/we certify that based upon periodic site observations, the work has been substantially completed in accordance with the Water Efficient Landscape Ordinance and that the landscape irrigation installation substantially conforms with the city approved plans and specifications.

Irrigation Design/Consultant Signature Date

State License No.

I/we certify that I/we have received all of the contract documents and that it is our responsibility to see that the project is maintained in accordance with the contract documents and the City of Huntington Beach Arboricultural and Landscape Standards, Specifications and the Water Efficient Landscape Ordinance.

Owner/Developer Signature Date

Title

LANDSCAPE WATER CONSERVATION CONCEPT STATEMENT

Project: _____Planning Entitlement Number: _____
Public Works Plancheck Number_____
Project Location:
Tentative Tract Number:
Landscape Architect/Irrigation Designer/Contractor:
Total Landscape Planting area in square feet: _____
Total Special Landscape area in square feet
Included in this project submittal package are:
(Check to indicate completion and circle descriptive amount)

1. Maximum Applied Water Allowance:
   _____ gallons or cubic feet/year
2. Estimated Applied Water Use:
   _____ gallons or cubic feet/year
3. Landscape Design Plan
4. Irrigation Design Plan
5. Irrigation Schedules
6. Maintenance Schedule
7. Landscape Irrigation Audit Schedule
8. Grading Design Plan
9. Soil Analysis

Description of Project
(Briefly describe the planning and design actions that are intended to achieve conservation and efficiency in water use.)

Prepared by:
Title:
CA License No.:

Date:

Appendix A

CERTIFICATION OF LANDSCAPE DESIGN

I hereby certify that:

(1) I am a professional Landscape Architect appropriately licensed in the State of California to provide professional landscape design services.

(2) The landscape design and water use calculations for the property located at _____

_____

(provide street address or parcel number(s)) were prepared by me or under my supervision.

(3) The landscape design and water use calculations for the identified property comply with the requirements of the City of Huntington Beach Water Efficient Landscape Requirements Ordinance (Municipal Code Section 14.52).

(4) The information I have provided in this Certificate of Landscape Design is true and correct and is hereby submitted in compliance with the City of Huntington Beach Guidelines for Implementation of the City of Huntington Beach Water Efficient Landscape Requirements.

_____ _____

Print Name Date

_____ _____

Signature License Number

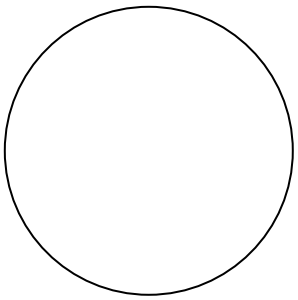
_____

Address

_____ _____

Telephone E-mail Address

Landscape Design Professional's Stamp
(If applicable)



A-1

Appendix B

EXAMPLE WATER EFFICIENT LANDSCAPE WORKSHEET

This worksheet is filled out by the *project applicant* for each Point of Connection. Please complete all sections of the worksheet.

Point of Connection # 1

Maximum Applied Water Allowance (MAWA)

Total *MAWA* = (ETo x 0.7 x LA in Sq. Ft. x *0.62*) + (ETo x 1.0 x *SLA* in Sq. Ft. x *0.62*) = Gallons per year for LA+*SLA*

where:
MAWA = *Maximum Applied Water Allowance* (gallons per year)
ETo = Reference Evapotranspiration **Appendix C** (inches per year)
0.7 = *Evapotranspiration Adjustment Factor (ETAF)*
1.0 = ETAF for *Special Landscaped Area*
LA = *Landscaped Area* (square feet)
0.62 = Conversion factor (to gallons per square foot)
SLA = Special Landscaped Area (square feet)

Example Calculation: a hypothetical landscape project in Huntington Beach, CA with an irrigated landscaped area of 40,000 square feet with 10,000 square feet of *Special Landscaped Area*. To calculate *MAWA*, the annual *reference evapotranspiration* value for Huntington Beach is 43.0 inches.

	ETo		ETAF		LA or *SLA* (ft^2)		Conversion		*MAWA* (Gallons Per Year)
MAWA for LA	43.0	x	0.7	x	40,000	x	*0.62*	=	746,480
MAWA for *SLA* =	43.0	x	1.0	x	10,000	x	*0.62*	=	266,600
Total *MAWA* =					50,000				1,013,080 Gallons per year for LA+*SLA*

B-1

Estimated Applied Water Use

EAWU = ETo x K_L x LA x *0.62* ÷ *IE* = Gallons per year
where:

EAWU = Estimated Applied Water Use (gallons per year)
ETo = Reference Evapotranspiration **Appendix C** (inches per year)
K_L *= Landscape Coefficient*
LA = *Landscaped Area* (square feet)
0.62 = Conversion factor (to gallons per square foot)
IE = Irrigation Efficiency = IME x DU (See definition in Appendix E for example IE percentages)
IME = Irrigation Management Efficiency (90%)
DU = Distribution Uniformity of irrigation head

$K_L = K_s \times K_d \times K_{mc}$

K_s = species factor (range = 0.1-0.9) (see *WUCOLS* list for values)
K_d = density factor (range = 0.5-1.3) (see *WUCOLS* for density value ranges)
K_{mc} = *microclimate* factor (range = 0.5-1.4) (see *WUCOLS*)

WUCOLS – ***www.owue.water.ca.gov/docs/wucols00.pdf***

Example Calculation:

	ETo		K_L		LA		Conversion		*IE*		*EAWU* *(Gallons per year)*
Special Landscaped Area	43.0	x	1.00	x	10,000	x	*0.62*	÷	0.75	=	355,467
Cool Season Turf	43.0	x	1.00	x	0	x	*0.62*	÷	0.71	=	0
Warm Season Turf	43.0	x	0.65	x	0	x	*0.62*	÷	0.71	=	0
High Water Using Shrub	43.0	x	0.70	x	0	x	*0.62*	÷	0.71	=	0
Medium Water Using Shrub	43.0	x	0.50	x	15,000	x	*0.62*	÷	0.65	=	307,615
Low Water Using Shrub	43.0	x	0.30	x	25,000	x	*0.62*	÷	0.75	=	266,600
Very Low Water Using Shrub	43.0	x	0.20	x	0	x	*0.62*	÷	0.71	=	0
Other	43.0	x	0.50	x	0	x	*0.62*	÷	0.71	=	0
Other	43.0	x	0.50	x	0	x	*0.62*	÷	0.71	=	0
Total *EAWU* =					50,000						929,682 *(Gallons per year)*

Compare *EAWU* with *MAWA*.
The *EAWU* (929,682 gallons per year) is less than *MAWA* (1,013,080 gallons per year). For this example, the water budget complies with the *MAWA*.

B-2

List *sprinkler heads*, microspray, and drip *emitters* here along with average *precipitation rate* and *Distribution Uniformity of Irrigation Head*.

***Sprinkler Head* Types**	**Average *Precipitation Rate***	***Distribution Uniformity of Irrigation Head***
Drip		
Microspray		
Bubbler		

B-3

WATER EFFICIENT LANDSCAPE WORKSHEET

This worksheet is filled out by the *project applicant* for each Point of Connection. Please complete all sections of the worksheet.

Point of Connection #__

Maximum Applied Water Allowance (MAWA)

Total *MAWA* = (ETo x 0.7 x LA in Sq. Ft. x *0.62*) + (ETo x 1.0 x *SLA* in Sq. Ft. x *0.62*) = Gallons per year for LA+*SLA*

where:

MAWA = Maximum Applied Water Allowance (gallons per year)
ETo = *Reference Evapotranspiration* **Appendix C** (inches per year)
0.7 = *Evapotranspiration Adjustment Factor* (ETAF)
1.0 = ETAF for *Special Landscaped Area*
LA = *Landscaped Area* (square feet)
0.62 = Conversion factor (to gallons per square foot)
SLA = Special Landscaped Area (square feet)

where:

MAWA = Maximum Applied Water Allowance (gallons per year)
ETo = Reference Evapotranspiration Appendix C (inches per year)
0.7 = Evapotranspiration Adjustment Factor (ETAF)
1.0 = ETAF for Special Landscaped Area
LA = Landscaped Area (square feet)
0.62 = Conversion factor (to gallons per square foot)
SLA = Special Landscaped Area (square feet)

MAWA Calculation:

	ETo		ETAF		LA or *SLA* (ft^2)		Conversion		*MAWA (*Gallons Per Year)
MAWA for LA =		x	0.7	x		x	*0.62*	=	
MAWA for *SLA* =		x	1.0	x		x	*0.62*	=	
Total *MAWA* =									

B-4

Estimated Applied Water Use

EAWU = ETo x *KL* x LA x *0.62* ÷ *IE* = Gallons per year

where:

EAWU = Estimated Applied Water Use (gallons per year)
ETo = Reference Evapotranspiration **Appendix C** (inches per year)
K_L = *Landscape Coefficient*
LA = *Landscaped Area* (square feet)
0.62 = Conversion factor (to gallons per square foot)
IE = Irrigation Efficiency = IME x DU
IME = Irrigation Management Efficiency (90%)
DU = Distribution Uniformity of irrigation head

$K_L = K_s \times K_d \times K_{mc}$

K_s = species factor (range = 0.1-0.9) (see *WUCOLS* list for values)
K_d = density factor (range = 0.5-1.3) (see *WUCOLS* for density value ranges)
K_{mc} = *microclimate* factor (range = 0.5-1.4) (see *WUCOLS*)

WUCOLS – ***www.owue.water.ca.gov/docs/wucols00.pdf***

EAWU Calculation:

	ETo		KL		LA		Conversion		*IE*		*EAWU* (Gallons Per Year)
Special Landscaped Area	43.0	x		x		x	*0.62*	÷		=	
Cool Season Turf	43.0	x		x		x	*0.62*	÷		=	
Warm Season Turf	43.0	x		x		x	*0.62*	÷		=	
Warm Season Turf	43.0	x		x		x	*0.62*	÷		=	
High Water Using Shrub	43.0	x		x		x	*0.62*	÷		=	
Medium Water Using Shrub	43.0	x		x		x	*0.62*	÷		=	
Low Water Using Shrub	43.0	x		x		x	*0.62*	÷		=	
Very Low Water Using Shrubs	43.0	x		x		x	*0.62*	÷		=	
		x		x		x	*0.62*	÷		=	
		x		x		x	*0.62*	÷		=	
		x		x		x	*0.62*	÷		=	
		x		x		x	*0.62*	÷		=	
		x		x		x	*0.62*	÷		=	
		x		x		x	*0.62*	÷		=	
Other		x		x		x	*0.62*	÷		=	

Total *EAWU* =

B-5

List *sprinkler heads*, microspray, and drip *emitters* here along with average *precipitation rate* and *Distribution Uniformity of Irrigation Head*.

***Sprinkler Head* Types**	**Average *Precipitation Rate***	***Distribution Uniformity of Irrigation Head***
Drip		
Microspray		
Bubbler		
Low precipitation rotating nozzles		
Stream rotors		

14.52.110 Nuisance. It shall be deemed a public nuisance for any person to fail to comply with any of the requirements as described in the foregoing sections. (3854-2/10)

14.52.120 Violations – Misdemeanor. Any person violating any of the provisions of this chapter shall be deemed guilty of a misdemeanor. Each day such violation is committed or permitted to continue shall constitute a separate offense and shall be punishable as such. (3854-2/10)

Appendix H

Orange County Water District, Groundwater Management Plan, July 2009 Update

Available on OCWD's website at: http://www.ocwd.com/Publications---Newsletters/ca-43.aspx

CITY OF HUNTINGTON BEACH

2000 Main Street
Huntington Beach, CA 92648